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The Production and Management Journal Covering North America's Wood Pulp, Paper, Paperboard and Cellulose Industries

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"The Cellulose Age"

EDITORIALS

In Unity There is Strength

The growing complications of the Marshall Plan, the increasingly complex situation in foreign pulp, the necessity for a fuller understanding of international trade, and signs that perhaps supply is reaching the point of demand at home—these are conditions which are going to call for the strongest kind of leadership and unanimity in the pulp and paper industry of North America.

Although crowding into fifth place among U. S. industries, the pulp and paper industry—like its ancestor, the lumbering industry—has never been noted for its unanimity of purpose. This is due to unalterable factors obvious to readers of **PULP & PAPER** and none of them a reflection on the industry. But lack of unanimity does breed lack of industry leadership. Associations, committees acting in advisory capacities to the government—to the governments of the world, in fact—can operate only within the frame constructed for them.

Now, over all the other confusion, looms the possibility—we do not say probability—of World War III. Never in its history was the industry faced with so many problems, so many challenges. There are brains in the pulp and paper industry equal to those in, for example, steel. It is not necessary for pulp and paper to accept what international "experts" may tell them is inevitable. And pulp and paper is too valuable an adjunct to the military—as we now know—to be at the mercy of the Army or Navy, or the State Department, or the United Nations.

The pulp and paper industry must step forth and take its rightful place in the plans for the recovery of the world — or the destruction of half of it, whichever Joseph Stalin decides it is to be. The big men in the industry—and this does not necessarily mean the chiefs of the biggest mills—must step forward now and forge a common denominator for the industry. This is not a division of "lumbering" or a section of "forestry and forest products" in Washington, or Paris, or Stockholm, or Bizonia, or the United Nations. It is an industry crowding for fifth place among all industries, vital to our own people and vital to the peoples of the world.

Canada - Newfoundland Merger

A majority of Newfoundlanders having voted in favor of annexation with Canada, it is expected that the island crown colony of Great Britain will soon become the tenth Canadian province.

The two major industrial assets thus acquired by Canada will be the big pulp and paper operations of Bowater's Newfoundland Pulp and Paper Mills and Anglo-Newfoundland Development Co.

Newfoundland's trading position with the United States is actually better than Canada's. In other words, the United States has been buying more from Newfoundland (almost entirely newsprint) than she has sold there, which is the reverse of the situation with Canada.

This leads to the supposition that many customs and foreign exchange complications will have to be removed before confederation between Canada and Newfoundland is finally completed.

In a practical sense Newfoundland's new political status should have little or no effect on the overall pulp and paper situation, but it will bring slightly closer to the wide-ranging field served by **PULP & PAPER** one of the world's most important producing areas and one that has consistently been among the leaders in evolution of mill and woodlands technique.

Public Relations and Common Sense

Until a measuring rod comes along, common sense is the best test of public relations. And common sense says that the top management of a company cannot delegate public relations to others, although it may delegate its details. Common sense says that no public relations counsel is worth a damn unless he has the complete confidence of top management and knows almost as much about the business as the president.

The pulp and paper industry, by and large, is doing mighty well with its public relations, whether you are talking about the entire industry or individual units. Most top executives have come to the full realization that public relations—including company and labor relations—is a responsibility resting squarely on their own shoulders. Those companies which have set up public relations departments have done so usually with intelligence, and with men of intelligence. Several are examples to all U. S. industry.

It is a good time to consider public relations in the light of common sense. Because, no doubt about it, public relations has been overblown, and in too many cases it is not working at all. There is no mystery about public relations, although there are people who like to make it seem mysterious. Good public relations means that the "folks" in management are getting along with other "folks" in their company, the "folks" outside the company, and with anybody in between who has the ability and the vehicle with which to interpret the company to the folks.

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BOWATER'S MACHINE

Probably Will Be Record Producer

Despite unprecedented strike tying up the government's entire narrow gauge railway system in Newfoundland and also stopping boat service from Sydney on the mainland, Bowater's Newfoundland Paper Mills pushed ahead critical work starting up its new big newsprint machine in mid-October.

To get through to the isolated island the guests, including notables from England (and an editor from PULP & PAPER), boarded an emergency air route, flying from Moncton, New Brunswick, to Gander, Newfoundland, by commercial air line, and then from Gander across the island to Corner Brook by special plane—the only way to get there because there are no highways crossing Newfoundland's rugged terrain.

Bowater's rushed to completion a specially built airfield to bring in their many guests for the startup of this machine, and also rushed in critically needed equipment, bulldozers finishing the job October 12th, the very day the strike began.

One of the most terrific storms of the year, however, then lashed the area for three days, but clear weather came through just the eve of the machine startup. Many of Bowater's guests so anxious to see the machine said they were bound to get there even if they had to take a dogteam.

Now the race is on between Powell River Company and Bowater's Newfoundland Paper Mills for the world's fastest news machine, and it is a sure thing that within a year one of these will be the fastest and the other the second fastest. In the last month Powell River's machine worked at a speed of over 1200 feet per minute within a few weeks of the startup in September, a remarkable achievement in contrast with the old days when it took many months just to get a machine going. Both machines potentially might some day reach the fantastic speed of 2000 feet per minute.

A new, 284-inch newsprint machine was starting up this past month at Bowater's Newfoundland Paper Mills, Corner Brook, N. F., and the startup was witnessed by a **PULP & PAPER** editor.

This addition makes the Bowater's mill, where Gerald Penny is manager, over a 1,000-ton-per-day paper mill, with six machines. There were a great many visitors on the island, which is soon to join Canada, for this event.

The new machine, made by Dominion Engineering, will make 250 tons a day at 1500 ft. per minute. It is potentially the biggest production machine in the world, as it is designed mechanically to go 2000 ft., but the possibility it will run that fast is quite remote. There will be a gradual speeding up of the machine. This machine compares for width with the 304-inch machine at Great Lakes Paper Co., and the 320-inch machine at Bowater's in Kemsley, England, which are the biggest on news.

The new Powell River machine is 226 inches wide, and will produce 200 tons at 1500 ft. per minute, a speed which will also make it one of the biggest producers in the world on news.

A 54-inch suction box with double box, biggest ever made, is on the Bowater's machine, Dominion Engineering officials said.

There are 50, 60-inch dryers, including 10 felt dryers; two calender stacks, and a Cameron winder on this machine. It has the new Dominion slice, with upper lip fully adjustable when running.

Waterous has installed new grinders, Sherbrooke Machineries installed new washers and Stebbins has lined new tanks in general expansion activities at Bowater. Corner Brook also makes 175 tons of sulfite pulp for export.

Sir Eric Bowater, president of Bowater's Pulp and Paper Mills, Ltd., and former Lord Mayor of London, was over from England for the startup. Bowater's owns four other large paper mills in Britain, as well as three pulp mills in Norway and Sweden.

The Bowater organization employes 6,600 workers of whom around 5,000 take part in woods operations about 30 miles from the mill. Timber can reach the mill in quantity only during the ice-free months—from May through December. Huge stores of pulpwood are stockpiled at the mill during these months to assure year-around production.

Electricity for the mill and for Corner Brook is supplied from Bowater's hydro-electric plant at Deer Lake, 30 miles away. Insufficient rainfall has occasionally resulted in a shortage of power and a consequent curtailment of production. These dry spells also hamper log movements through the many streams leading into the upper Humber.

Bowater's Power Problem

Bowater's has met this problem by the installation of coal-fired boilers at the mill, to provide power when the Deer Lake supply is inadequate. Also, a system of dams has been developed to regulate the flow of water and to prevent a too-rapid run-off when stream levels are below normal.

Newfoundland's present annual production of around 400,000 tons of newsprint goes to markets throughout the world, but principally to the United States. The production centers are the Bowater's Newfoundland Pulp and Paper Mills, Ltd., at Corner Brook, and the Anglo-Newfoundland Development Co., Ltd., at Grand Falls. Both of these are British owned and directed.

The main portion of the production at Bowater's Newfoundland mill is shipped to the United States, for use in the press-rooms of newspapers located in the Great Lakes area, along the Atlantic Coast, and in the Gulf states. The remainder of the output goes to Britain and to the various British Dominions. A small proportion remains in Newfoundland to help supply the islands for major newspapers.

Bowater's S.S. Corner Brook and several other cargo ships load the newsprint rolls directly from the mill's wharves on the Humber River. The trip to New York takes four days, but the Corner Brook often goes as far as Louisiana and Texas. There the ship not only delivers newsprint, but also picks up sulphur needed for mill operations.

Bowater's officials are confident about the future, for, as Sir Eric has put it, "There is no foreseeable end to the world shortage of newsprint." Nor is there any foreseeable end to Newfoundland's ability to supply woodpulp for the island's ever growing paper industry. Bowater's holds one-quarter of the timber-land area of Newfoundland, and these 11,000 square miles have been scarcely grazed in woods operations thus far. Some of the most modern mechanized woods operations are here.

A new cutting area on the Gander River—in the semi-wilderness of central Newfoundland—was opened last year. Wood from the Gander area is shipped to Corner Brook on Newfoundland's narrow gauge railroad, the only cross-country link at the present time. A project to export limited quantities of groundwood in addition to newsprint is part of Bowater's expansion program.

Few changes are anticipated by Bowater's when the island becomes Canada's tenth province. Newfoundland has become a highly prized dollar-earner in the British Commonwealth. This is not based

solely on newsprint exports. The United States maintains three Army bases and a Naval base on the island which net Newfoundland about $10,000,000 a year in payment for wages, materials, and services.

In the newsprint field, Bowater's exports last year totaled $23,000,000.

Labrador, Newfoundland's dependency bordering Quebec on the North Atlantic mainland, is also an attractive prize for Canada. This sub-Arctic wilderness is three times the size of Newfoundland itself. Along part of its coastal area, some timber operations are now in progress. However, newsprint production in Labrador is probably little more than a paper-starved publisher's pipe-dream. The region is difficult of access and largely unexplored.

Bowater's can claim a major share of praise for its part in Newfoundland's economic revival since 1933. Corner Brook, the only large community on the west coast, is a company town in the best sense of the phrase. With the expansion of the newsprint plant has come a parallel development of a truly model community. Most of the town's sturdy, attractive, and individually styled homes were built by Bowater's.

Corner Brook is now witnessing more new construction than many comparable American cities. Two new hospitals—the Western Memorial and a government tuberculosis sanatorium—are nearing completion. Outside the town, a Bowater's-built model dairy is greatly increasing the local milk and ice cream supplies. Newfoundland's roads are practically non-existent, but Bowater's is now putting a truck road through to Grand Falls, in the center of the island.

Many of Bowater's subsidiary holdings in Corner Brook, such as its charming Glynmill Inn, were transferred last June to a separately operated corporation.

POWELL RIVER CO.'S NEW PAPER MACHINE No. 8 (Dominion machine) is installed in a building partially completed in 1930 when machine No. 7 was acquired. It is capable of mechanical operation at speeds up to 2000 f.p.m., 600 f.p.m. faster than the older machine, but will run at less. A speed of 1500 f.p.m. is now in prospect.

The stock inlet is of entirely new design, developed by Powell River. Totally enclosed, it operates under conditions of constant level and variable pressure. It is expected to extend the range of commercial operation well beyond existing limits.

Foundrinier is of conventional, removable type. Suction couch roll is of large diameter, equipped with double-compartment presses arranged for automatic loading.

There are 52 main dryers and 10 felt dryers, arranged in four sections. It has a J. O. Ross hood.

Como Ca Va, Canada?

WHAT'S DOING IN ITS MILLS

Qu'est il fait au Canada? To ask what's doing in Canada's pulp and paper industry in French seems quite in order. Any eastern Canadian mill superintendent who doesn't know French is handicapped. French-speaking employes are very much in the majority.

A tour this past month through many of these Canadian mills was made by **PULP & PAPER** for the purpose of bringing to its readers the news of latest trends and developments in the Canadian industry.

Admittedly, this is a somewhat cursory attempt to tell what's doing, but at least the attempt is made only after checking and re-checking information in talks with many of the responsible leaders of the industry all the way from Vancouver to Corner Brook, Newfoundland. Sixteen representatives, from the new kraft mill at Terrace Bay, Ont., to the expanded Bowater's mill in Newfoundland, were visited in the course of these travels.

The most serious problem today in eastern Canada has been the power shortage. The dryest summer and fall in the recorded history of Quebec and Ontario, preceded by very little snow last winter, had caused considerable worry. As this issue went to press, however, torrential rains had ended the long drought—and the power crisis. It was a lucky October 13 for these provinces this year—it rained all day.

Wood Supply Adequate

All eastern Canadian mills seem to have an adequate supply of wood. The labor shortage in the woods has been corrected and that has improved the picture. The long term view for wood is good—most mills seem to be planning well, and nearly all the big plants, the five mills of Canadian International Paper Co., and many others, appear to be assured of a perpetual supply.

Mechanization in the woods has become a really significant trend. Anglo-Canadian and Anglo-Newfoundland Paper Mills are setting a significant example; so is Bowater's and the Kimberly-Clark operation near Kapuskasing. A lot of modern equipment is moving into these areas.

Some of the fine paper mills which used to get peeled wood are now forced to take it unpeeled and this has meant some additional barking equipment. Big news mills always got their wood rough.

A great deal of attention is being given to speeding up of the big news machines. Although there has been a lot of experimenting with headboxes, removing perforaters, putting them back, eliminating passes, etc., there really hasn't been much permanent change in the conventional headbox. A new slice with easily adjustable upper lip is going on new and old machines.

But, perhaps, a principal way speed-ups have been achieved is adding or improving screening. A large number of new Bird screens or replacements have been

installed. Removable or semi-removable Fourdriniers have been installed; double suction boxes are the vogue, and additional vacuum pumps are frequently seen.

It seems really noteworthy and quite remarkable as indicative of a trend, that Canadian Ingersoll Rand has supplied 21 Bird screens to one mill alone in three years, and three more are on order. Canadian Ingersoll Rand has found the Johnson knotters acceptable for increasing operation efficiency in several mills, also.

Canadian International's Three Rivers mill with its eight 160-inch Fourdriniers on news, is still probably the biggest producing mill in the world, but it is being challenged by Powell River and Bowater. The latter's new machines may soon get up to 1500 ft. per minute (mechanically they are designed for the fantastic speed of 2,000 ft. per minute). Bowater might soon be making around 1,000 tons.

But this is still to be established and meanwhile the records show Three Rivers leading with well over 900 tons a day for an average.

Record Fast Machines

The Baie Comeau, Quebec, mill, owned by the Chicago Tribune, is generally recognized as having the fastest machines—up to now, running 1650 and faster. This mill is the newest of the Quebec mills although it is several years since it was built. Four of the Three Rivers machines were reported up to 1375 ft. per minute. Anglo-Canadian has four machines from England running 1350-1380, it is said, and the Gatineau mill of I. P. has machines running around 1350.

In the trend toward upgrading of production of products and utilization of kraft, there have been many changes. There are new bleach plants in, or going in at: LongLac Pulp and Paper Co., Terrace Bay, Ont.; the E. B. Eddy Co., Hull, Que.; Brown Corp., LaTuque, Que.; International Paper Co., Gatineau, Que.; the Fraser Companies, Edmundston, N. B.

A new kraft mill is being built at Newcastle, N. B., by Fraser, the pulp to be bleached at Edmundston, and then piped across the international border to Madawaska, Maine, reputedly biggest catalog paper mill in the world.

Ralph Murchie is the resident manager at New Castle; Eugene Duluca is superintendent, and J. N. McCaffrey, plant engineer. Mr. McCaffrey is working under Frank O. White, veteran chief engineer and Maine-born mill builder for The Fraser Companies.

LongLac's bleach plant is for the new kraft mill there, bleaching all of its 200 tons. The bleach plants run three to four stages, mostly continuous, and with room to add stages if desired. LongLac's is five stages and will bleach all of the 200 tons a day of kraft made there—all of it for Kimberly-Clark's use in its products which range from book to wadding.

Mill Has Model Town

If there was ever a new mill which deserves to succeed—if that should be the reward for painstaking engineering and unlimited effort—then it is the new mill which Kimberly-Clark has built at Terrace Bay. And here is the model town of all model mill towns—224 homes in a veritable pine forest park, every one designed differently, with bright paint of all shades. Except just two, said one Terrace Bay wag—and they were made identical "so there would be an error!"

A new 54-room hotel of British Columbia cedar, with probably the most wonderful view on the north shore of Lake Superior, has opened and Kimberly-Clark has invited all major equipment companies and others to be on hand for the official start-up November 22. Don Porter is the new mill manager, as we reported, and has moved in with his family. George Clark, Kimberly-Clark's kraft pulping key man, has been on hand, as one of the principal figures in starting up the mill. As is the practice in Kimberly-Clark, key men who were there for construction will be replaced by key men in all positions for the operation.

Significant Trend

Another significant trend in Canada—which has probably about reached its peak—is the general expansion. LongLac is the last of the series of new kraft mills on the north shore of Lake Superior. Fifty miles east, Marathon's mill is settling down to steady output, but it was building more homes for employes when **PULP & PAPER** toured this area. KVP's mill at Espanola is going smoothly and Brompton's at Red Rock set a style with a new chip storage installation, feeding from the top to two bins, each angling outward and then back inward to screw feed and conveyor below a narrowed bottom of each bin. The "bow-legged" chip bins, you might call them, and LongLac thought highly enough of the style to do it at Terrace Bay, which just about was the last item of construction there.

Gatineau will have a new No. 10 digester, operating next spring. Great Lakes Paper Co., at Fort William, Ont., will operate its added digester, No. 5, with shell from Tacoma, Wash., this next month. Stebbins provided brick tile for both of these digesters. Rhinelander Paper Co. of Rhinelander, Wis., will get the output from Great Lakes.

It might be a surprise to our readers to hear that there is a real spirit of fellowship and cooperation in meeting common problems now developing among the four new kraft mills in Ontario. The day **PULP & PAPER** visited LongLac, a KVP key man was also a visitor. Kimberly-Clark men have been to Marathon and to Red Rock and vice versa. These are all fairly standard kraft mills, but they are sharing in some new ideas. Then, of course, they have common labor problems and their relations with the Ontario government offers a common meeting ground. They have one big problem and can help each other with it—that's finding ways to make their employes and families happier living in those Northern woods. They are doing a good job.

We probably shouldn't have suggested in the paragraph above that this teamwork is a surprising thing. It's not surprising to anyone who knows the sense of citizenship in the industry as a whole which these companies have practiced for many years—especially in their Michigan and Wisconsin relations with other companies in those states.

Gatineau World Center

Gatineau is today becoming one of the greatest wood utilization centers of the world. It makes Novocell dissolving pulp

(Continued on page 70)

HERE IS AIR VIEW of new LongLac Pulp and Paper Co., kraft mill at Terrace Bay, Ont., visited by PULP & PAPER on eve of startup, set for November 22.

There are now six big 90-ft. high woodpiles where the double stacker is seen at top left. (From left to right), the buildings in background are: wood room (conveyor seen leading to it at upper left); chip storage (where new construction is seen); screening; pulp mill; recovery house (the highest building); Cottrell precipitator on top of building at right.

Coming forward from the recovery building there is the Flakt-dryers room, packing room and storage on left. The high building on right center is bleach plant. Laboratory, engineers rooms and locker rooms are in small buildings at extreme right.

It's easy as pie

to figure out why

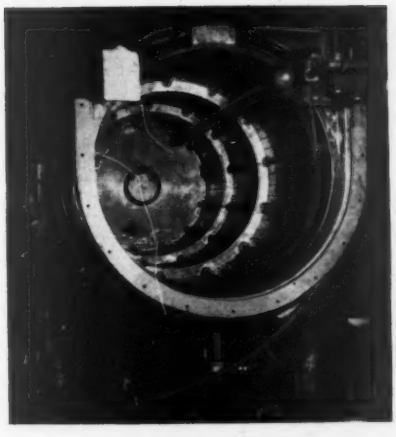
90% of all the paper machines in North America are equipped with . . .

BIRD SCREENS

Big, modern Bird Screens have the capacity to deliver clean stock up to the limit of the paper machine to take it, at maximum machine speed.

They assure good formation by supplying fibres that go on the machine nicely combed out and straightened—thoroughly individualized.

They deliver stock free of strings, lumps and slime — uniform in weight.



Have your Bird Screens been given this "New Look"?

The Bird Oscillating Shower keeps the screen slots clean and open with a small fraction of the volume of shower water formerly required. It means better control of papermaking water and quickly pays for itself. Dozens of mills are putting them in their Screens. Better look into it.

BIRD MACHINE COMPANY
South Walpole • Massachusetts

A NEW SULFITE LIQUOR CYCLE

THE FIRST MgO PLANT

HOWARD W. MORGAN, Manager of the Pulp Division of Weyerhaeuser Timber Co. since January, 1947.

Ten long years of research, experiment and equipment development have culminated in the start up this past month of a full-scale magnesia base process recovery plant which recovers heat and chemicals for operation of the sulfite mill of the Pulp Division of Weyerhaeuser Timber Company at Longview, Washington.

In a closely-grouped series of concrete and steel buildings and towers, connected by a maze of stainless steel tubing, is some of the most elaborate, automatically controlled industrial machinery ever seen in a pulp mill. The photographs published with this article are evidence that it is a beautifully styled industrial plant with a superior type of equipment throughout.

HISTORY

In 1940 the Babcock & Wilcox Co. and Howard Smith Paper Mills, Ltd., announced at the February, 1940, TAPPI meeting in New York the results of several years of joint experimental work and pilot plant operation on a cyclic process of treating sulfite pulp residual liquor involving the recovery of chemical in addition to the recovery of waste heat. The main departure from conventional practice was in the use of magnesium oxide in place of calcium oxide as the base of the cooking liquor. This was based on the discovery by George H. Tomlinson, vice president of Howard Smith Paper Mills, Ltd., that magnesium, of all of the chemical bases which might be considered for sulfite acid, is unique in that when a Mg0 base waste sulfite liquor is burned under certain specific conditions, SO_2 is liberated and an ash can be produced containing highly reactive MgO free from magnesium sulfide. The SO_2 can then be absorbed in a slurry of the recovered Mg0, thus making possible a cyclic recovery process. Laboratory investigations showed results sufficiently promising to justify the installation in 1937 of a pilot plant at the Cornwall, Ontario, mill of Howard Smith Paper Mills, Ltd., as an intermediate step before undertaking the installation of a full scale commercial plant.

Meanwhile the Weyerhaeuser Timber Co. had been investigating the possibilities of a Mg0 base sulfite acid, and a pilot plant was constructed and operated by Weyerhaeuser at Longview under the supervision of the Pulp Division Research Department directed by R. S. Hatch. One commercial digester was operated for about a year with magnesium base acid with recovery obtained in a pilot plant furnace.

The common objectives of the companies involved in the development of this process and the desirability of eliminating any further duplication of effort soon led to collaboration and the decision that the first full scale commercial mill would be installed by Weyerhaeuser at Longview. The decision to undertake this pioneering venture at considerable expense was in line with the progressive policy of the Weyerhaeuser management. Shortages of critical materials and the participation of the interested companies in the war effort considerably delayed the schedule for the new mill and it was not until 1946 that construction was begun.

The chemicals being recovered are magnesium oxide and sulfur dioxide, which are reused in the digesters of the Weyerhaeuser Timber Co.'s 275-ton bleached sulfite pulp mill at the Columbia River seaport. For the first time in the 81-year history of the bi-sulfite process magnesium oxide has been used exclusively in place of the traditional calcium lime.

But side by side with the recovery of these chemicals in the form of Mg0 dust and SO_2 gas, is the production of heat and energy which should supply a large part of the necessary power for operation of the sulfite mill. These two goals are achieved in a seven-stage cyclical process in which all waste cooking liquor is evaporated and burned and the residual dust and gas is transformed again into a strong raw acid for reuse in cooking of chips.

Obviously, there are many tremendously important implications for the future of the sulfite pulp industry in the pioneering venture. It will be many months, no doubt, before complete operating data will be available.

In this illustrated article, PULP & PAPER brings to its readers the first detailed report authorized by Weyerhaeuser Timber Co., of a new process in commercial scale operation, which, if it proves successful, holds many important implications for the future of pulp manufacturing.

RAYMOND E. BAKER, Manager of the Longview Pulp Division mill of Weyerhaeuser.

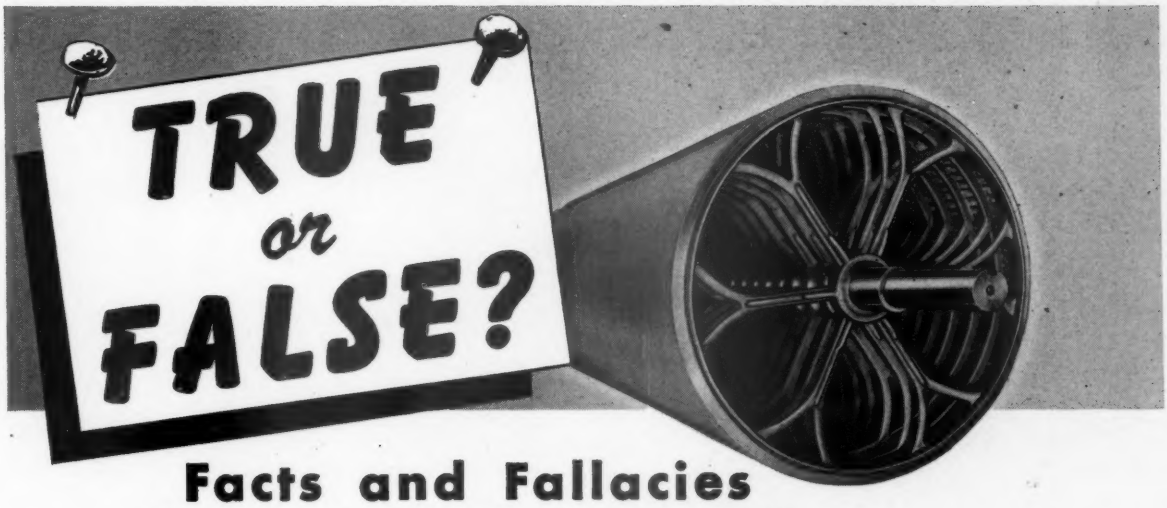
The Weyerhaeuser Timber Co. was peculiarly fitted to pioneer in this new enterprise, and one important reason is their unique and diversifed program for wood utilization. The Mg0 plant stands between the 15-year-old, but modernized, sulfite pulp mill and an entirely new 200-ton bleached sulfate, or kraft pulp mill, scheduled to start operations soon. The sulfite recovery furnaces are in the same building with the kraft recovery furnace, the evaporators for the two systems are together, and they will create energy produced through the same power generating equipment. There is just one recovery and power plant department under one superintendent, serving both the sulfite and kraft pulp mills, which in itself is an administrative arrangement believed to be quite new in this industry.

Much of the slab wood and wood trim which used to provide the hogged fuel to produce the power for the sulfite mill will no longer be needed for that purpose because of the Mg0 plant. The wood will be utilized, however, as raw material for the new kraft mill.

From the vantage point of an airplane, looking down on the varied Weyerhaeuser operations spread over 600 acres where the Columbia takes its last big bend toward the sea, one sees that the cluster of white buildings and the white towers of the Mg0 plant are just a small part of an integrated forest products industry. Probably nowhere else in the world could one look down on such a scene. Here are large sawmills, a plywood plant, a bark products plant, two big log and one small wood hydraulic barking plants, a forest products laboratory, all integrated for the efficient utilization of the trees grown on Weyerhaeuser's St. Helens Tree Farm.

DESIGN AND CONSTRUCTION

The Mg0 plant just going into operation at Longview was designed in its entirety by Otto C. Schoenwerk, of Chicago. Mr.



Facts and Fallacies about Cylinder Moulds

● It's possible to increase drainage, sometimes up to 20%

TRUE High rods and wire, a Cheney Bigelow patented feature, permit greater distance between spider rims and winding wire. This results in increased water flow. Many mills using this surface construction report up to 20% increased drainage and a much longer cover life.

● Worn chime rings usually mean new head castings

FALSE Where chime ring wear is important, a removable chime or packing ring, which doubles as a clamping ring, is easily replaced at considerably less expense than that of replacing a head casting. Replaceable chime rings are another Cheney Bigelow feature.

● Cylinder moulds with wide spacing between spiders cost less

FALSE Of course, the fewer spiders in a cylinder mould, the less the purchase price. But it's *false* economy—since rods are bound to deflect without adequate support. A spacing of not over 4" between spiders is best—and for heavy couching, closer spacing at either end is desirable.

● There's more than one way to cut stock loss

TRUE A *sure* way, in cylinder machine operation, is to equip your cylinders with the new Cheney Bigelow round rubber seal. This new seal, with its unusual sealing properties, eliminates a lot of the stock in the white water that gets through the usual felt seal.

● Cheney Bigelow offers a complete cylinder mould service

TRUE Cheney Bigelow not only custom-builds cylinders that are *right* for your job, but also repairs and recovers hundreds of cylinders yearly. Experienced engineers, skilled workmen and modern equipment work at Cheney Bigelow to produce the best in cylinder moulds . . . and thickeners, dandys, wire cloth, Fourdrinier wires, other pulp and paper mill equipment. Cheney Bigelow Wire Works, Springfield, Mass.

PULP & PAPER
MILL EQUIPMENT

Cheney Bigelow

SPRINGFIELD • MASSACHUSETTS

SOME UNUSUAL EQUIPMENT NOW IN OPERATION in the MgO plant of Weyerhaeuser Timber Co., Longview, Wash. In this picture, upper left, are MgO cooling tower and first absorption tower with kraft mill stack in background. Upper right, view at one end of the 4 stock tanks in the dump and wash building. Lower left, control panel and testing station in new acid fortification plant. Lower right, MgO furnace spray cooling tower in background with ESCO heat exchangers in foreground.

Schoenwerk had the research results of the investigations previously mentioned to guide him in his design. Because of his vast experience, Mr. Schoenwerk was able to anticipate many of the practical problems which arise in the design of a plant for a new process such as this. He was also in charge of construction of the plant.

Robert B. Wolf, of New Canaan, Conn., who retired a year and a half ago as manager of the Weyerhaeuser Pulp Division, sponsored the pilot plant work at Weyerhaeuser and the commercial plant.

Others closely identified in the installation were Howard W. Morgan, manager of the Pulp Division since January, 1947; Raymond E. Baker, manager of the Longview Pulp Division mill, and Don Felthous, present Longview Pulp Division's plant engineer.

SEVEN STAGES

At the outset of this article, we described the MgO plant as a 7-stage cyclical process. These seven stages may be listed as follows:

1. Dumping and washing. Digesters are dumped instead of being blown, as is customary, and effluent carries 12 to 14 per cent solids after the pulp is separated and sent to the mill.

2. Evaporation. Effluent consists of 50 to 55 per cent solids after this step.

3. Burning. Heat is created for the boilers and chemicals are preserved.

4. Separation. Multiclones collect the burned magnesium oxide while sulfur dioxide is carried off in flue gas.

5. Cooling. Gas is cooled by water in towers between the boilers and absorption towers.

6. Absorption. The magnesium oxide

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PULP
PAPER

Domestic Export Import

As keenly competitive market conditions return to the pulp and paper industry, more and more mills turn to Bulkley, Dunton for the solution of purchasing, distribution and export problems. Bulkley, Dunton's intimate knowledge of supply sources and markets, its worldwide connections and outlets assure these mills of important advantages both here and abroad.

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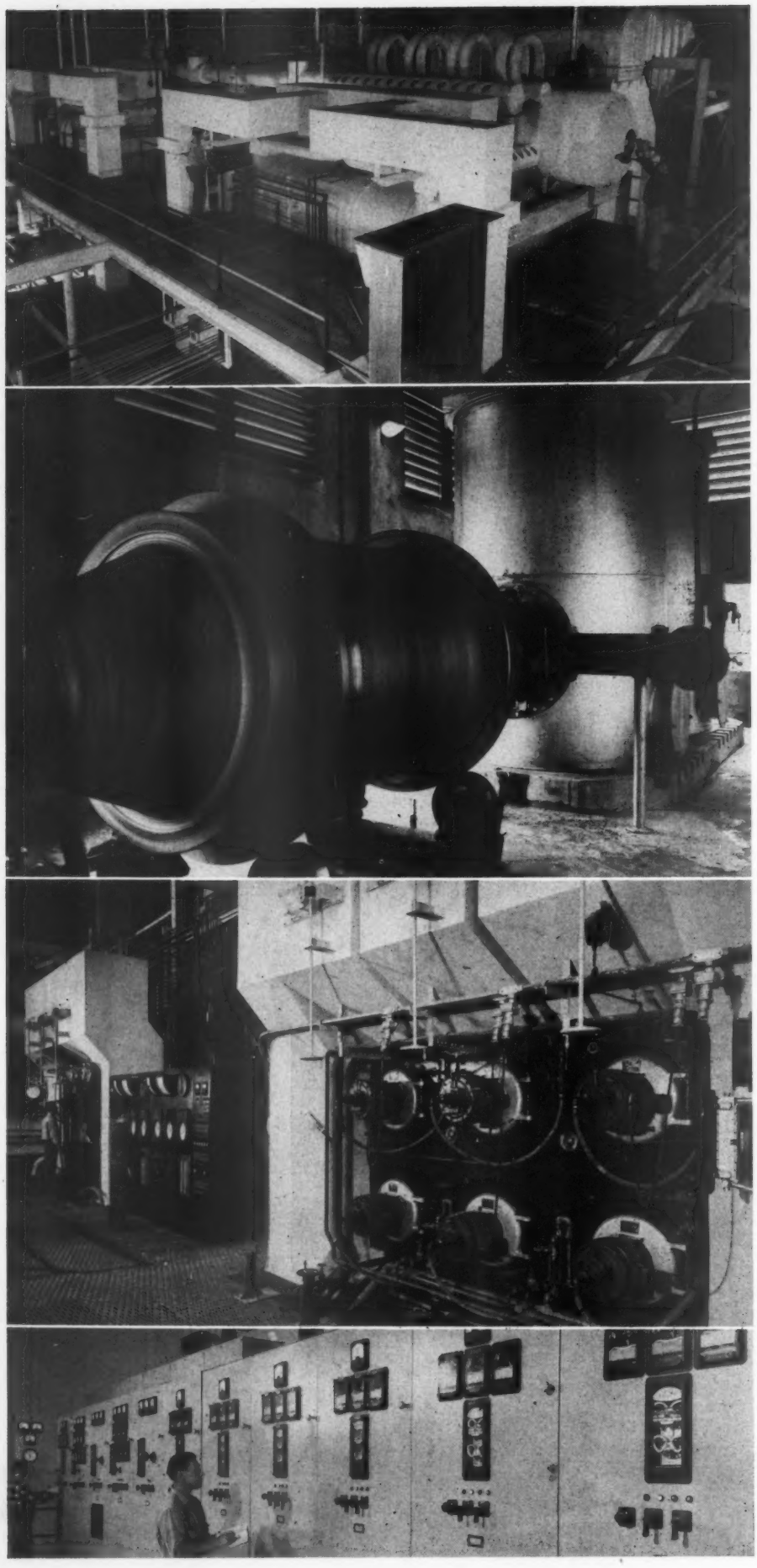

WEYERHAEUSER EQUIPMENT at the left includes: Top—View top of Babcock and Wilcox MgO furnace. Second down—Sulphur burner and combustion chambers installed by G. D. Jenssen and Co. Third—Burners and control panel for two B&W MgO furnaces. Bottom—Electrical distribution panel in power station.

dust is made into a slurry with water, capable of absorbing the sulfur dioxide from the combustion gases.

7. Acid fortification. Free sulfur dioxide is built up to a point where there is a suitable combination of magnesium bisulfite and free sulfurous acid to return to the pulp mill's present hot acid system ahead of the digesters.

Prior to these steps there have been some changes in the sulfite digester house. Pressure is now brought down quickly so the digesters can be dumped instead of blown. A new and special type of blow-down cooler and digester relief system has been designed by Electric Steel Foundry. The coolers are much larger than those usually used in a conventional sulfite mill set up. There has been a revamping of digester circulation equipment and addition of Electric Steel Foundry digester heaters.

Here is a more detailed description of each of these steps in the liquor cycle:

1. Dumping and Washing

This first step brings the visitor into a low building which presents one of the most novel sights ever witnessed in a pulp mill. Here are four huge horizontal steel dump tanks which look like small dirigibles. Each one is 70 ft. long and 17 ft. in diameter and they have Stebbins acid-resistant brick linings.

As previously stated, the digesters are no longer blown, in blow pits in the conventional manner, but are dumped into these huge receptacles.

Contents are then pumped to an upper floor where there are four Bird Machine Co. Jonsson knotters in parallel ahead of three big 8 ft. x 16 ft. stainless steel Oliver United washers set in concrete vats with acid-resistant tile linings. The washers are ventilated by a hood and exhaust system installed by Drew Engineering. Foxboro controls are used.

The dumping operations call for quite a few changes in the digester circulation system. Collector rings were moved to the digester bottom cones in order to circulate from bottom to top and thus use low ratio liquor to the wood. An additional digester was added in the sulfite mill because a longer blowdown period was required in order to bring contents to atmospheric pressure.

Electric Steel Foundry Co. single pass indirect heaters are used. A low pressure relief system for relieving digesters to atmospheric pressure was necessary in order to carry out the new dumping process and to recover gas.

When the digesters are ready for dumping, they are back-filled with waste liquor and waste liquor is used continuously during dumping to dilute the pulp. The diluted pulp is carried through a brick catcher and pump to the agitated dump

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2. *Fewer Filings:* Simonds special steel . . . plus Simonds special methods of tempering and hardening . . . plus constant watchfulness and testing by experienced Simonds saw men *all along the line* . . . these are your guarantees that Simonds *Crescent Ground* Crosscut Saws will cut more timber with less elbow grease and fewer filings.

Order them from your dealer today . . . these top-quality Simonds Saws with the red marks on blade and handle.

BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Avenue, Portland 4, Ore.; 31 W. Trent Avenue, Spokane 8, Washington. *Canadian Factory:* 595 St. Remi St., Montreal 30, Que.

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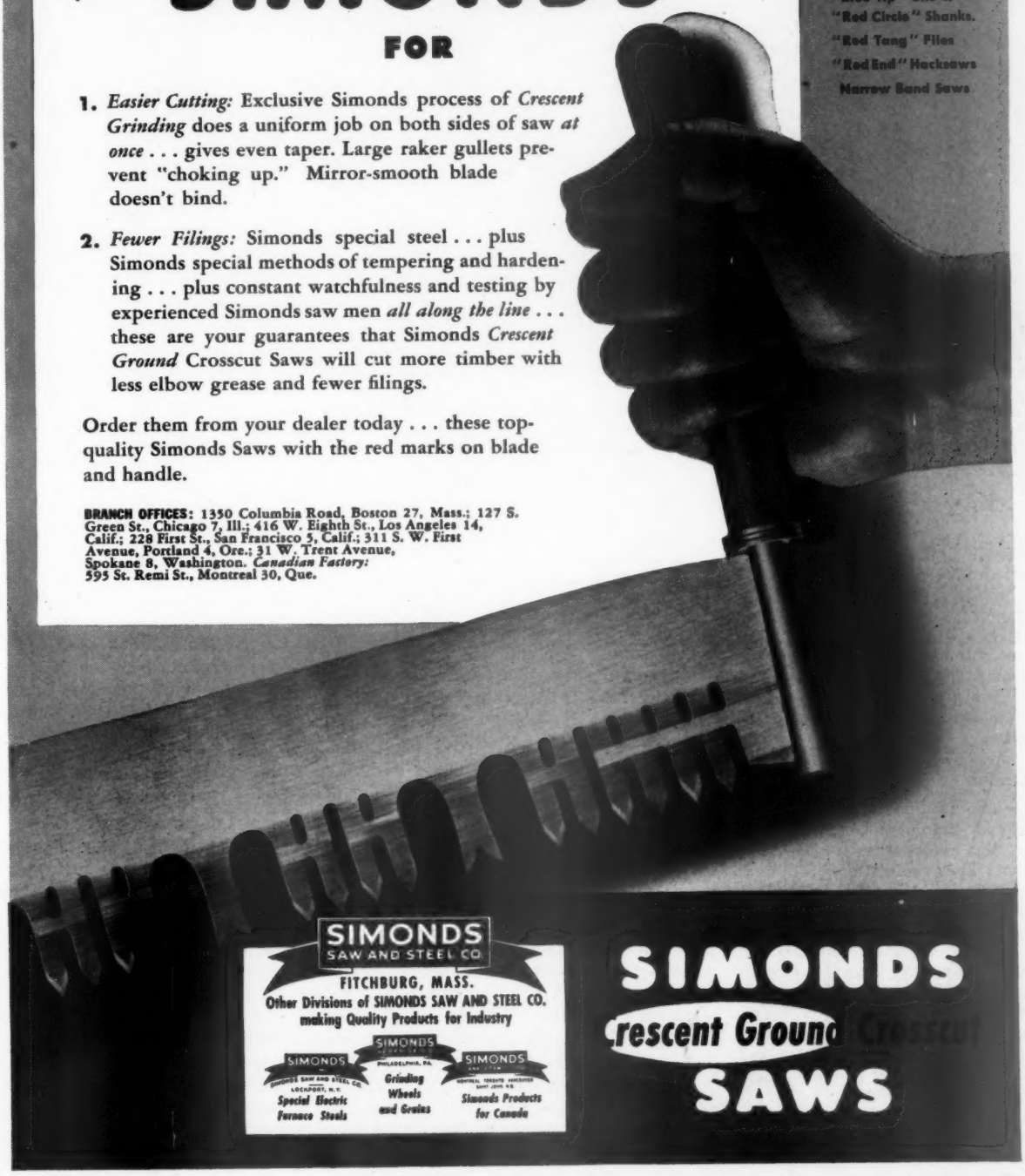

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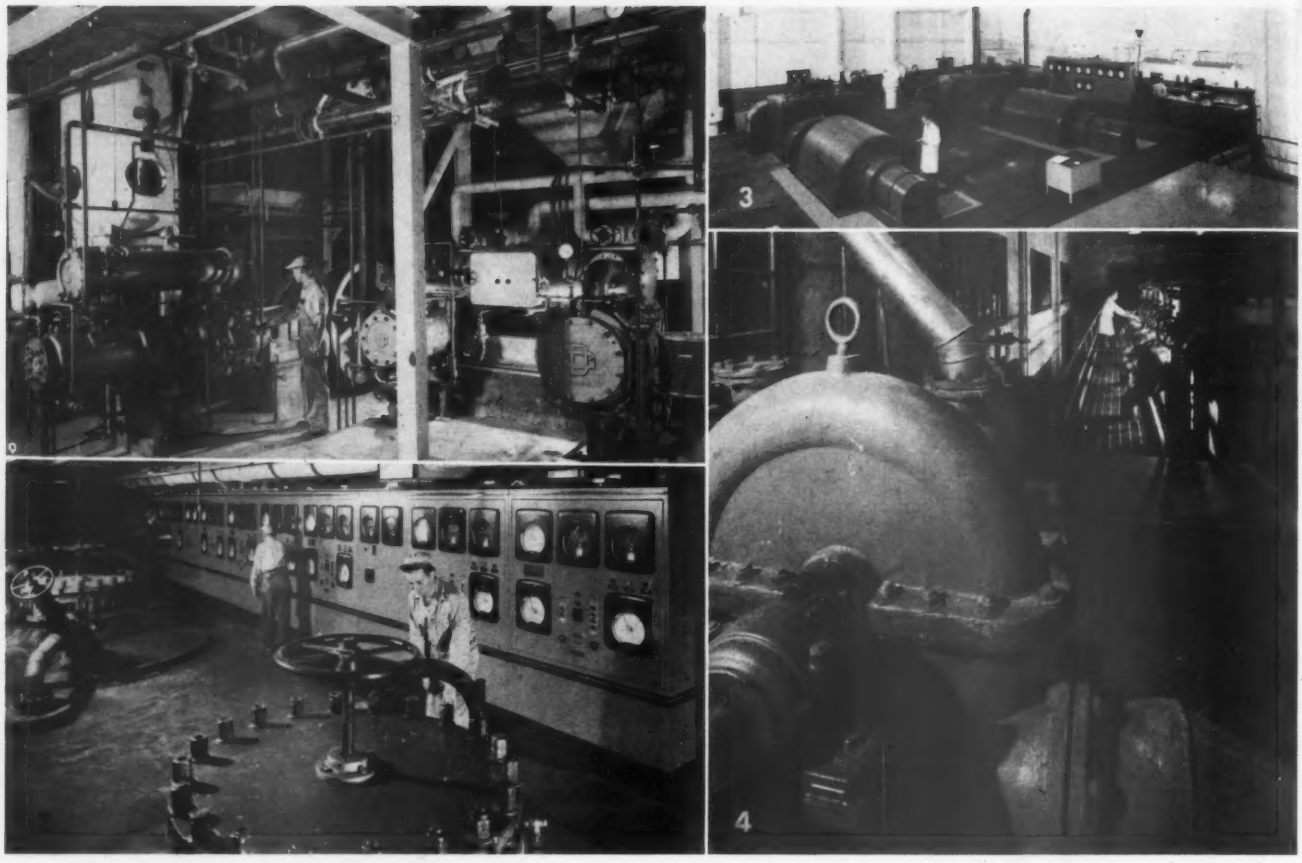


IN USE AT NEW MgO PLANT 1—Air compressors in power house with Cochrane water softener in background. 2—New Foxboro sulfite digester control panel. 3—Turbine room showing two General Electric non-condensing turbines and 6250 KVA generators. 4—New G. D. Jenssen acid fortification plant with gas fan in foreground and filters in background.

tanks where it is held at approximately 3 per cent consistency.

In the washing stage, steel foot boxes with acid-proof linings installed by Stebbins Engineering are used. There is a wooden foam tower and a foam breaker. Bingham stock and liquor pumps are used. Separated from the pulp, the waste liquor with 12-14% solids then goes to the evaporating plant.

2. *Evaporation*

On one side of this building are the evaporators for the new kraft mill and on the other, the evaporators for the new MgO system. They are distinctly different in their appearance. All of the evaporation equipment was supplied by General American Transportation Corp., and Foxboro Co. supplied the controls for centralized operation. Six-body, quintuple evaporators of the submerged-tube type are used. They are the forced circulation type and designed to produce 4.58 lbs. of evaporation per pound of steam. There is a complete use of stainless steel in these evaporators, with stainless plate or stainless clad plate used throughout.

The sulfite waste liquor before entering the evaporators is first neutralized with MgO collected after the furnace in order to prevent loss of any SO_2 (sulfur dioxide) during the evaporation.

3. *Burning*

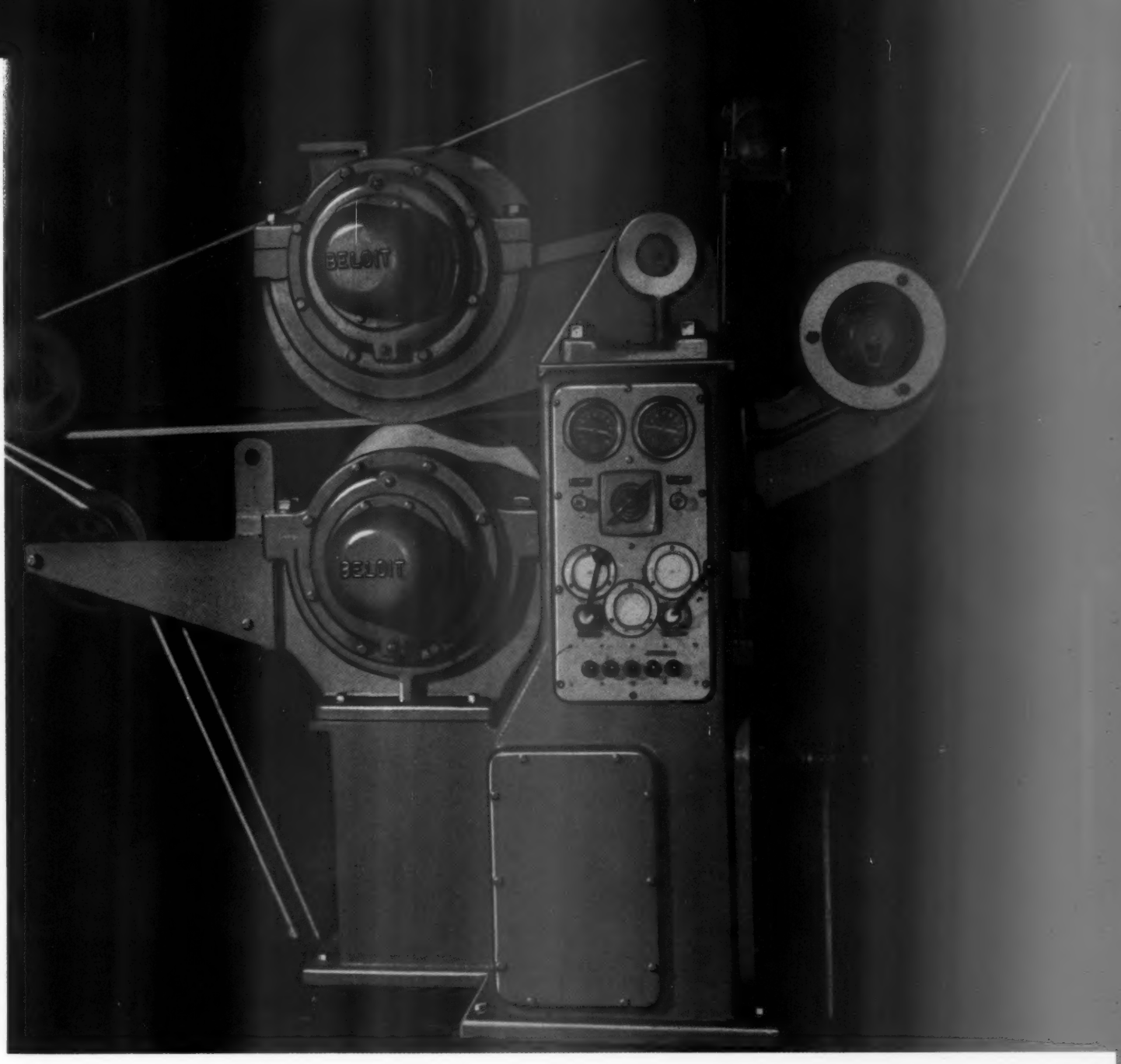
The B&W recovery furnaces and boilers for the MgO and kraft plants are located in communicating boiler rooms without any separating walls, and present curious contrasts. The conventional kraft boiler room is 90-ft. high, about twice as high as the MgO boiler room. The kraft boiler room has seven floors, in contrast to three floors for the MgO side of the building. The 70-ft. high kraft recovery boiler, suspended on four steel columns, is rated as a 220-ton unit and has a steam generating capacity of 101,200 lbs. of steam per hour at 615 psi and 700 F. The two sulfite recovery boilers are designed for 69,600 lbs. steam production per hour at 615 psi and 700 F. It is expected that each will be rated as an approximately 137½-ton unit. The relatively higher steam production of the sulfite recovery units will be noted. The sulfite boilers are a two-drum Stirling extended furnace type, in contrast with the vertical type on the kraft side. The sulfite boilers are equipped with gas-air heaters rather than with economizers, as in the kraft recovery unit. The waste sulfite liquor is burned under self-sustaining combustion conditions with furnace temperature and gas velocity conditions maintained such as to produce dry ash of the desired purity and reactivity and the removal of the ash produced in suspension in the flue gases leaving the boilers. All of the recovery units are followed by cascade evaporators, those for the sulfite recovery units being of a special stainless steel single-wheel design by O. C. Schoenwerk.

The further concentrated liquor is then passed to the burners of the recovery units which are of a type which can fire either black liquor or oil.

The combined boiler plant described produces the steam for two 6250 KVA turbo-generators in an adjoining room in which the power is created for operating the two pulp mills. These turbines exhaust at 35 psi pressure and bleed at 135 psi and are fully automatically controlled from a central control board.

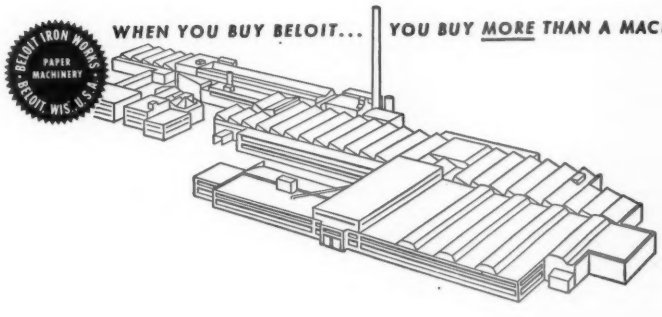
4. *Separation*

In the next step in the MgO cycle, the burned magnesium oxide is collected in multiclones supplied by Western Precipitation Co., and then conveyed to the absorption towers by Redler-type conveyors. The multiclone separators are over the furnaces and the Stephens-Adamson Co., of Chicago, supplied the Redler con-



Faster drying, denser sheet

What are the advantages of a Beloit patented Air-loaded Breaker stack? Denser sheet, for one thing. Better finish, faster drying, positive nip control. Machine is compact and clean; no external weight rods, levers or cylinders. Convenient, too: drive clutch, sheet draw and nip pressures are controlled from operator's panel mounted in the front frame. —*Beloit Iron Works, Beloit, Wisconsin.*



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BELOIT

PAPER MACHINERY

veyors which are a closed-chain type in which the collected dust travels in bulk down a tube.

5. Cooling

Meanwhile the SO_2 gas from the furnace carried off by flue must be cooled and this is done in all-steel cooling towers, lined by Stebbins, which are situated after the boilers and outside the boiler house. There are 12 sections of Electric Steel Foundry heat exchangers on these cooling towers which cool with water. The flow of acid-cooling water is counter-current to the flue gases.

6. Absorption

The SO_2 gas is then absorbed in six concrete, Stebbins tile-lined absorption towers in two series of three each, one lineup for each boiler. In each tower a neutral magnesium bisulfite is prepared. The magnesium oxide dust which we left in the Redler conveyors in step No. 4 is redissolved in water and it is fed down from the top of the absorption towers in the form of water suspension. The SO_2 gas goes up the towers countercurrent to the magnesium oxide slurry. Gases from which SO_2 has been removed are discharged to the air.

7. Acid Fortification

Here is an independent three-stage system furnished by G. D. Jenssen Co., Inc., Watertown, N. Y. Their Western representative, Halvar Lundberg, of Seattle, engineered the independent 3-stage acid fortification system. The steps here are from sulfur burner to gas cooler to Jenssen absorption tower. It is in the Jenssen tower that the weak acid from the absorption towers of the MgO cycle is built up with more SO_2 produced in this 3-stage acid fortification plant. This produces a strong acid, (a mixture of magnesium bisulfite from the absorption towers and free sulfurous acid. The free SO_2 is built up to about 3 per cent SO_2. This is a 60-ton capacity acid fortification plant. The strong, raw acid then goes back to the sulfite mill digester building where it is built up with the digester relief and is retained in accumulators and storage before being fed back to the digesters.

A magnesium oxide storage tank with Link-Belt loader bucket elevator to load trucks is alongside the acid fortification plant. Electric Steel Foundry Co., of Portland, supplied the heat exchangers, stainless steel valves and fittings and much of the stainless steel parts for the Bingham pumps which are used throughout the MgO system. The extensive lines of stainless steel tubing which is observed all through this process were furnished by Northwest Copper Co., and Alaskan Copper & Brass Co. of Seattle.

OUR COVER THIS MONTH shows the gleaming new MgO buildings at the Weyerhaeuser Timber Co. mill, at Longview, Wash. In the left foreground are the accelators and filter plant.
The chemicals recovered here are magnesium oxide and sulfur dioxide

OTTO C. SCHOENWERK, Consulting Engineer of Chicago, designed the entire MgO plant. He was also in charge of construction of the plant.

CONCLUSIONS

And thus an entirely new process, which is expected to be one of the revolutionary developments in the history of pulp manufacturing, has been built at Longview. The complete story is yet to be told, and it will be revealed in a mass of operational statistics gathered day by day, week by week, and month by month in the course of the next year or two. The process is designed to recover and use 100 per cent of the waste-cooking liquor from this pulp mill.

LICENSING OF PROCESS

This radically different process and the special equipment devised for its most efficient operation has resulted in the grant of numerous U. S. and foreign patents (U. S. patents Nos. 2,179,456, 2,192,239, 2,238,456, 2,285,876, 2,308,364, 2,320,294, 2,351,780, 2,354,175, 2,377,282, 2,385,955, other patents pending) to be interested companies. It is intended to make this cyclic sulfite recovery process available to the pulp industry by granting licenses under these patents on terms best adapted to a widespread use of the process. The Babcock & Wilcox Co., 85 Liberty St., New York 6, N. Y., will serve as the exclusive licensing agent.

Betner Co. Builds In Paris, Texas

Benj. C. Betner Co. have just recently completed a modern one-story factory building in Paris, Texas, in which will be manufactured all of the various types of bags that are produced in their other four plants located at Devon, Pa., Richmond, Va., Appleton, Wis., and Los Angeles, Calif., according to V. C. Ambler, manager, Southwestern division.

Equipment in the Southwestern division factory formerly located in Oklahoma City is being moved to this plant, and numbers of new machines are being added to enable them to properly serve the Southwestern area. This company specializes in the manufacture of bags particularly adapted for the special requirements of their customers. They will manufacture automatic style bags for coffee, flour, and sugar; waxed glassine bags for potato chips and bakery products; and laminated glassine bags for corn chips and kindred products. A large proportion of all of the bags made here will be made with Thermoseal tops to provide a means by which customers can heat-seal their filled bags for the best product protection.

Seaport Paper and Carter, Rice Merge

Merger of Seaport Paper Co. with Carter, Rice & Co. of Oregon, became effective October 1, with William G. Batson moving over as industrial paper division sales manager for Carter, Rice.

Bill Batson joins the Carter, Rice executive staff. He had owned Seaport for 2½ years, and has had 18 years experience in the wrapping paper field. For 15 years he was Northwest representative of Patterson Parchment Paper Co., Bristol, Pa.

James W. Murphy continues as president. Carter, Rice offices are located in Portland, Medford, Eugene, Bend, Ore.; and Boise, Idaho.

MORLAN J. GRANDBOIS (left) recently appointed Assistant Sales Manager, Printing, Publication and Converting Paper Div., St. Regis Sales Corp. He was with Advertising, Publicity and Sales Promotion Dept., where he handled advertising for all divisions. Formerly he was with Bryant Paper Co. and came to St. Regis when that company acquired Bryant Paper Co. in 1946.

LESTER M. CURTISS (right) has been named General Works Manager of Lukens Steel Co. and its divisions, By-Products Steel Co. and Lukenweld, according to G. D. Spackman, vice president in charge of operations. Mr. Curtiss joined Lukens in 1919 as assistant engineer of tests. Since then he has been general superintendent and general manager, steel plants.

Experimentation

LIFEBLOOD OF PROGRESS

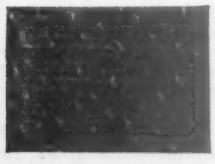
Without the friendly cooperation of the mills the idea of a chemically treated line of felts would have died aborning. Because to the mills experimentation is the very lifeblood of progress, the greatest forward step in felt manufacture in forty years became a reality. To those mills our sincere appreciation.

This "greatest step forward in the felt field in 40 years"—quoting a superintendent—is fully borne out by the following:

Practically every grade of paper and board, from tissues on up to boxboard and roofing felt, has been produced with Orr-Chem felts. And the felts behaved better and lasted longer than the felts previously used, regardless of type or size.

Especially important to mills operating on an employee cooperative program is the time saved by reducing or entirely eliminating production losses due to wash ups; also the sharp reduction in per ton felt costs due to longer felt wears. Both increase the profit and both fatten the payroll. There are Orr-Chems to meet any need.

Untreated bottom felt after term on machine, very much worn.



Orr-Chem on same machine after "use"—felt still in good shape.

THE ORR FELT & BLANKET CO., PIQUA, OHIO

ORR-CHEM

Historical Meeting

Under the blue and white banners of the Technical Section of the Canadian Pulp and Paper Association and the Maine-New Hampshire division of TAPPI, the first mechanical pulping conference in history was held September 27 to 29th at Poland Spring House, Poland Spring, Me.

National TAPPI president Wilbur Gillespie, Gaylord Container, was on hand to welcome the technicians from both sides of the International boundary. Said he: "This is not only the first strictly mechanical pulping conference, but it is also the first conference of its kind sponsored jointly by the Canadian and U. S. technical associations. It is more than these. It is a conference to the memory of the late Werthen Brawn in whose mind originated the idea of such a joint conference where the whole field of mechanical pulping might be discussed."

That the idea was a good one was demonstrated by the attendance of more than 200, with a very small percentage of affiliates, and some of the most lively discussions ever to take place at a TAPPI meeting. The program held strictly to the field of mechanical pulping, as if following the big chart diagram on the wall, an illustration furnished by Keyes Fibre Co.

Some of the 200 had stayed over from the Northeast Superintendents' meeting which had taken place the week before (see page 62 this issue) and active in the TAPPI program committee was the man who had chairmanned the earlier meeting: Albert E. Bachmann, Missisquoi Corp. The general chairman of the big TAPPI meet was John L. Parsons, Hollingsworth and Whitney. He was assisted in addition to Mr. Bachmann, by the following: R. M. Drummond, International Paper; Henry J. Perry, Frederic C. Clark Associates; W. W. Holland, Quebec North Shore Paper Co.; G. E. Shipman, Donnacona Paper Co., Ltd.; G. F. Witty, Canada Paper Co.; A. P. Gregory, St. Regis Paper Co.; H. E. Pratt, Pejepscot Paper Co.; J. J. Thomas, S. D. Warren Co.; and Jack Wright, National Aniline.

The big banquet held on the evening of the first day, featured the S. D. Warren Co. Glee Club and John T. Gould, famous Maine editor and author who spoke in high humor on the subject of government pamphlets. John Parsons was master of ceremony for the affair which was designated as "Maine-New Hampshire Night."

In accordance with general instructions issued to all industry publications by TAPPI officials, **PULP & PAPER** is not at this time abstracting or publishing technical papers from the meeting.

PACIFIC COAST SUPTS.
Program Is Being Arranged

Pacific Coast Superintendents are again lining up pulpmaking, papermaking and boardmaking roundtable discussions as the high spots of their annual convention, as far as technical discussions go, when they meet again at the Hotel New Washington in Seattle on Dec. 3 and 4.

N. W. Coster, general superintendent of Soundview Pulp Co., Everett, Wash., and A. C. McCorry, pulp mill superintendent, St. Regis Paper Co., Tacoma, are to be general co-chairmen of the convention.

At this meeting, Gerald F. Alcorn, kraft mill superintendent, Weyerhaeuser Timber Co., Longview, Wash., concludes his second term as chairman. Rad Russell, assistant superintendent, Everett Pulp & Paper Co., is first vice chairman, and L. D. McGlothlin, kraft mill superintendent, Crown Zellerbach, Camas, Wash., is second vice chairman.

Doug Morris will handle reservations again and Fred Armbruster will assist as secretary of the division. The Brotherhood of Migratory Peddlers will put on a breakfast show.

COMING INDUSTRY MEETINGS

TAPPI Engineering Conference—Statler Hotel, Buffalo, N. Y. ..... Oct. 25-28

Delaware Valley TAPPI—Engineers' Club, Philadelphia ..... Oct. 28

National Paper Trade Assn.—Hotel Stevens, Chicago.. Oct. 28-30

Waxed Paper Institute (Annual Fall Meeting) — Congress Hotel, Chicago ..... Oct. 29

Forest Products Research Society (Pacific N. W. Section)—Vancouver and Powell River, B. C. ..... Nov. 8-10

Pacific Coast TAPPI—(Slime Control)—Camas, Wash. ..... Nov. 16

Pacific Coast Div., Supt's Ass'n—New Washington Hotel, Seattle, Wn. ..... Dec. 3-4

National Materials Handling Show—Convention Hall, Philadelphia ..... Jan. 4-10, 1949

American Paper & Pulp Assn.—Waldorf-Astoria, New York ..... Feb. 20-24, 1949

National TAPPI Convention—Commodore Hotel, New York ..... Feb. 21-24, 1949

National TAPPI Coating Convention—Grand Rapids, Mich. ..... Apr. 26-28, 1949

National TAPPI Fall Meeting—Multnomah Hotel, Portland, Ore. ..... Sept. 12-16, 1949

Paper Industry Salesmen—Midston House, New York City—Every Monday, 12 noon to 2 p.m.

Allied Industries' Luncheon Club—Second Monday of month, 12 noon, Commodore Hotel, New York.

ROBERT W. HOWARD (left) has been appointed Sales Engineer for the tri-state area of Pennsylvania, New York and New Jersey, by Moore & White. He was formerly sales representative for Holyoke Machinery Co. of Massachusetts.

ROBERT BAUM (right) Technical Director, Fernstrom Paper Mills, Pomona, Calif. is also doing a splendid job as Chairman of the California Manufacturers Assoc. Committee on Water Pollution and Industrial Waste.

Celanese Corp. Signs for Equipment

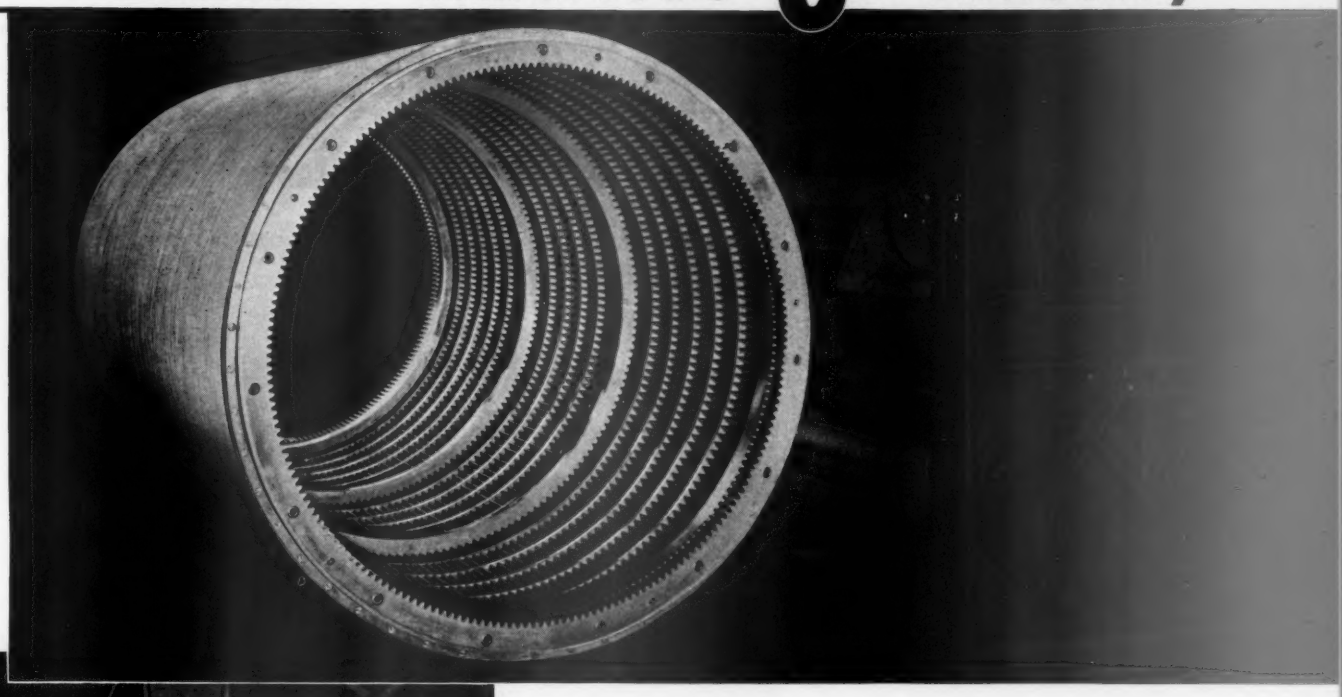
Celanese Corp. of America officials were in Montreal in early October and said they were closing contracts with some companies for equipment for the new high alpha pulp mill they are building near Prince Rupert, B. C.

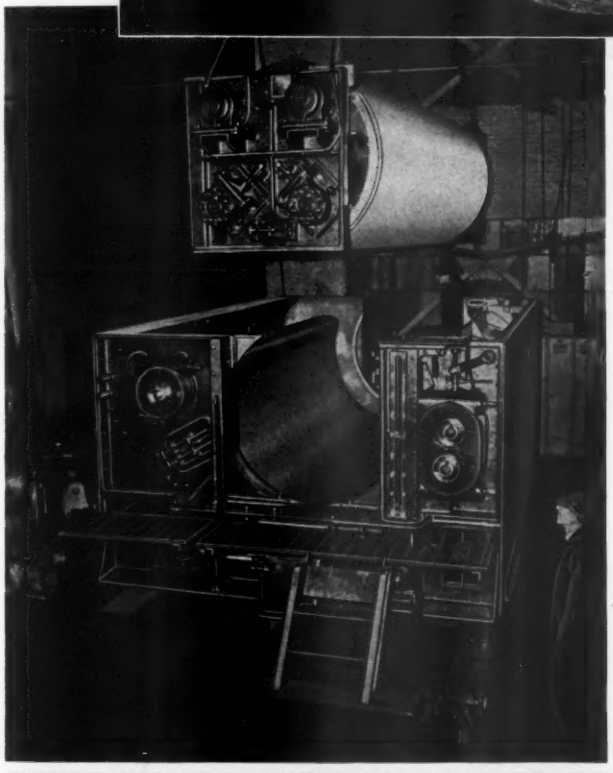
Two 136-inch Flakt pulp drying machines are ordered, according to principals. The Celanese officials say the mill started producing in mid-1940.

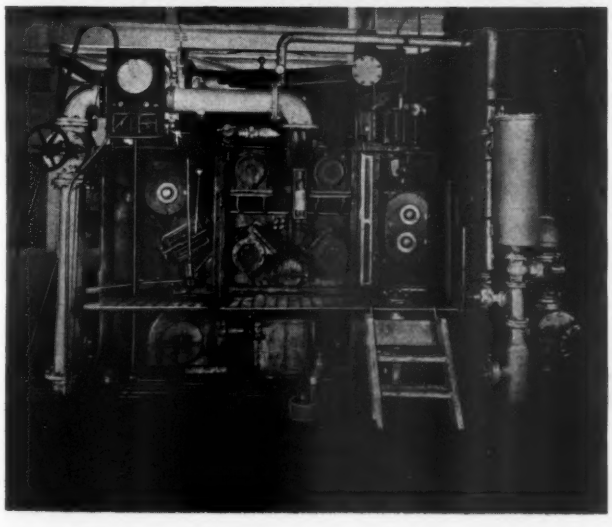
E. F. Paffen, general purchasing agent of Celanese Corp., in New York, and Dr. R. H. Ball, assistant to the technical vice president, negotiated contracts. Stadler, Hurter and Co., Montreal, are engineers.

MORE CHANGES AHEAD — The National Association of Retail Grocers were recently told that pre-packaging of meats to permit self-service handling will continue to play a bigger and bigger part in meat merchandising. The rapid rise of electronic pre-cooking of meats was also predicted. (Printers' Ink.)

PAPER · · · America's 6th Industry







Stream-Flow Cylinder Mold for a sheet free of spoke disturbance

You can actually *see* the difference in sheets formed on the Vacuum Stream-Flow Cylinder Mold. Formation is greatly improved due to the elimination of spoke disturbances. As the mold rotates, water is drawn gently inside and there is no disturbance of fibers already formed on surface.

This new development for both single cylinder and multi-cylinder machines—permits use of vacuum to whatever degree the operator desires and thereby:

(1) Lowers consistency by increasing drainage
(2) Reduces slipping, especially at emergence
(3) Reduces amount of slice water and counteracts couch crushing
(4) Keeps felts clean by drawing white water down instead of up through felt

If you are operating cylinder machines and haven't seen the Vacuum Stream-Flow Cylinder Mold, write us without delay. Let us give you the latest report on improved forming quality and rates of production with the Vacuum Cylinder Mold. The results will amaze you. Our bulletin, "The Vacuum Stream-Flow Cylinder Mold," is yours for the asking.

Paper is no better than its formation

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

BELLINGHAM PROGRESS

Installations at Puget Sound Pulp

There always seems to be something doing at Puget Sound Pulp & Timber Co., in Bellingham, Wash., generally recognized as a progressive and modern mill in the sulfite field. So it is not surprising to find that currently the big projects there are:

Important additions to screening capacity.

Two new tile-lined chests.

An important addition to boiler installations.

Increased dock warehouse space.

In recent months this mill has been averaging about 365 tons daily of 24-hour output of unbleached sulfite pulp. Of course, some more production will be possible with the new improvements, but primary reasons for the expansion of facilities has given the mill greater flexibility, to make cleaner pulp and to increase the safety of operations.

The screen room additions are especially aimed toward making possible the production of cleaner pulp, giving more storage of pulp and making expansion a possibility.

Twenty-four Improved Paper Machinery Corp. flat screens—each one a 14-plate screen—are being added. Also four 42-in. by 84-in. Impco deckers.

Five lines of four flat screens each, in the old set-up, are being relieved. Three of these old lines of flat screens—12 in all—will now be used as knotter screens.

Two new chests are installed and these are lined by Stebbins Engineering Corp. of Seattle. One is for white water and the other for brown stock. An existing brown stock chest has been changed to a decker chest.

A 2-drum Stirling type Babcock & Wilcox 140,000-lb. boiler was being installed as this was written and this will be the fifth boiler at this plant. The other four are 4-drum boilers. This one will operate at 200 p.s.i., but is designed for 600 p.s.i. Thus, it will not only make up for a steam deficit, but give more leeway for repairs and make for easier and safer as well as increased production, as desired.

IN THIS AIR VIEW OF PUGET SOUND PULP & TIMBER mill at Bellingham, Wash., the loading dock is at extreme left of picture. To the right of dock is the new hydraulic barking plant with log haul. The new board mill is long building in center foreground. Alcohol plant and lignosite plant are at extreme right.

A 60 by 200-ft. warehouse addition is being added on the mill dock, increasing warehousing capacity by one-third.

Lawson Turcotte is vice president and general manager at this mill; Erik Ekholm is general superintendent; Harold Cavin, chief engineer; Victor Haner, plant engineer and Eric Ericsson is technical director.

NEWSPRINT PROSPECT

—Good, Says Schmon

Headed by President Arthur Schmon, a group of executives and technical men of the Ontario Paper Co. recently visited the west coast. Their main object was a trip to Powell River to see the operation of the company's new newsprint machine and its wood-handling operation, including hydraulic barker and chipper.

Accompanying Mr. Schmon, who makes his home in Montreal, were Lorne Anderson, manager of manufacturing; Bruce Gralow, assistant manager in charge of pulp mills; Ben Jones, assistant manager in charge of development; Dr. C. S. Sankey, technical director, all of Ontario Paper Co., which in addition to its mill at Thorold, Ont., operates the big newsprint mill of Quebec North Shore Paper Co., a subsidiary at Baie Comeau, Que.

Ontario Paper Co. is owned by the Chicago Tribune-New York News organization.

Before returning east the Ontario Paper Co. party visited some pulp and paper mills in the Northwest states.

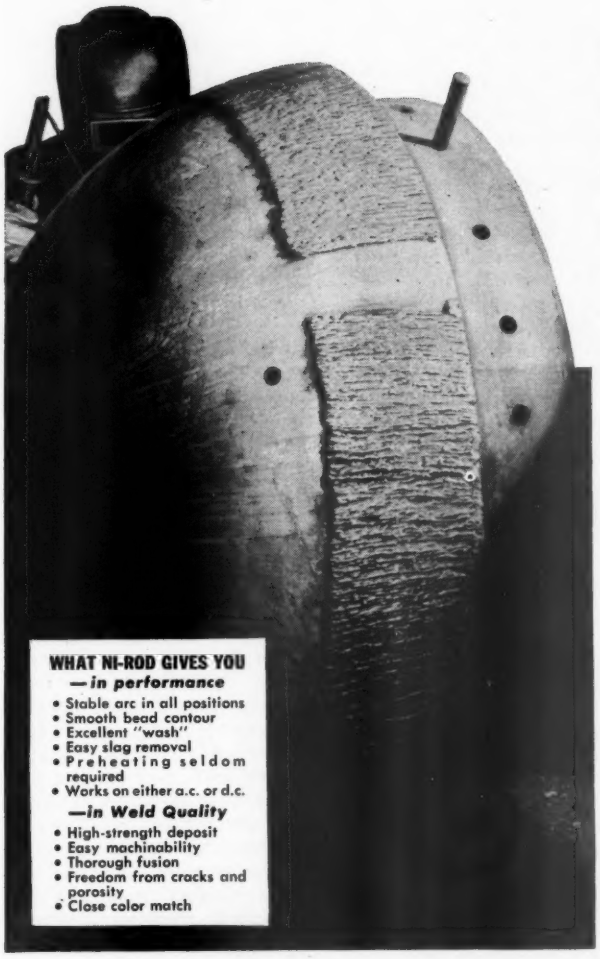
"I can't help being optimistic over the future of the newsprint industry," said Mr. Schmon in Powell River. "We'll never return to the condition of over-production and market uncertainty we had in the '30's. I cannot easily visualize a period where there will be a balance between supply and demand. If we assume as a conservative estimate that U. S. consumption will increase from its present 69 lbs. per capita to 74 lbs. by 1955, this alone will mean a total consumption in the United States of 6,000,000 tons of newsprint."

Mills Can Supply All If Run At Capacity

Despite world shortage of newsprint the mechanical capacity of mills is sufficient, providing all facilities are fully utilized according to R. M. Fowler, president of the Newsprint Association of Canada, who recently spoke to a meeting of U. S. newspaper management executives and Canadian newsprint manufacturers in Milwaukee, called to examine the newsprint situation.

William G. Chandler, New York, a Scripps-Howard executive, stated that the daily newspaper publishers in the United States feel that there are so many uncertain qualities in restoring idle newsprint mills that it would be better to increase production through additional machines and new mills.

If it's CAST IRON you can weld it with NI-ROD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• Easy machinability
• Thorough fusion
• Freedom from cracks and porosity
• Close color match

NI-ROD WELDING ELECTRODES SUCCESSFULLY BUILT UP THIS WORN DIE

Dished heads are just one of the products of Lukens Steel Company, Coatesville, Pa.

They're formed with large hemispherical dies. Dies made of cast iron. Dies that are fairly expensive. When one wears down, Lukens' maintenance men try to restore the original contours.

For several years Lukens had used brazing to build up the worn areas. Then they tried Ni-Rod* welding electrodes because of good reports on its strength and easy machinability.

Here's what Lukens has to say about this repair job:

> **"With other wires, it was found that welds would pull loose from the casting when in use. Ni-Rod was the only electrode that could be used successfully. It would not pull loose when in operation, and had a very good wearing quality. We now use Ni-Rod for building up dies to insure good wear and where pressure on the die is involved."**

The welded die (before machining) is shown at the left. Note the smooth layer of Ni-Rod beads. Proof of Ni-Rod's easy handling!

*Reg. U. S. Pat. Off.

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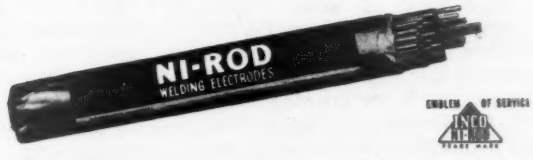

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CHEMICAL SOCIETY

SUMMARY OF IMPORTANT PAPERS

The western session of American Chemical Society's 114th national meeting was held in Portland Sept. 12 to 17 featuring sessions on agricultural and food chemistry, cellulose chemistry, biological chemistry, chemical education, colloid chemistry and sugar chemistry, including many sessions of great interest to the pulp and paper industry.

The agricultural and food chemistry division was highlighted by a symposium on wood and wood products with H. K. Benson, retired former head of the chemistry department, University of Washington, as presiding officer. A brief synopsis of papers presented during this session follows:

FOREST MANAGEMENT AND WOOD RESOURCES OF THE PACIFIC NORTHWEST by W. F. Holzer and William R. Barber, Crown Zellerbach Corp., Camas, Wash.—Forest industries forming the economic backbone of the Pacific Northwest are doing everything in their power to guarantee an ample supply of raw material in perpetuity. The principal phases of this long-term agricultural project include making timber available through road construction; protection against fire, disease and insects; cutting the trees at proper harvest stages ranging from thinning to clear cutting and developing equipment for harvesting each type; starting the new cycle either by encouraging natural reseeding or planting; and promoting fuller utilization of wood, thereby increasing potential capacity of the forest lands. The role of the chemist in developing new ways to use lower grades of wood products is essential.

SEED SELECTION IN TREE FARMING by Leo A. Isaac, U. S. Forest Service, Portland—Tree farmers were urged to use progressive horticultural methods to assure hardier and faster growing timber stands. In the Douglas fir region there are over 2½ million acres set up as tree farms but forestry is the last great industry using growing things for raw materials that has not improved the original wild stock under management. The essential first step, already underway in some cases, is selection, not only of the right tree species, but the best strain for the locality. The second step will be the improvement of the best strains through genetics. Here chemistry plays its most important part in production of seed for tree farms.

WOOD STRUCTURE BY ELECTRON MICROSCOPE by Bror L. Grondal, University of Washington, Seattle, Wash.—This appeared to be the most "remarked about" paper of the meeting because of the "new look" into wood cell structure as shown in the 35,000 to 46,000 X magnification slides. In these could be seen lignin nodules in cellulose. It is anticipated that utilization of the electron microscope as a tool for determining elementary structure of wood will open up an extensive field for subsequent studies.

MECHANICALLY DEFIBERED WOOD FOR SOFTBOARD by A. T. Walton, Simpson Logging Co., Shelton, Wash.—The Northwest has a considerable quantity of wood materials suitable for use in softboard manufacture. Here the greatest interest at present possibly lies in the by-products of existing manufacturing operations which are now wasted or utilized as fuel. In general old-growth Douglas fir is not as desirable for raw material as western hemlock for softboard. The old-growth Doulas fir tends to break up and form wood flour more readily than either western hemlock or second-growth fir, which is explained by the increased lignification and thickening of the cell wall upon aging in the old-growth Douglas fir. Western hemlock and white fir require more energy to reduce them to an acceptable freeness but the strengths upon reaching that freeness are much higher than the old-growth Douglas fir. There is great need for basic research relative to almost all products made from whole-wood fibre.

HARD BOARD MANUFACTURE ON THE PACIFIC COAST by H. D. Erickson, West Virginia University, Morgantown, W. V.—Since the war the manufacture of hard board on the Pacific Coast has seen its greatest growth. In most cases fibre sources are wood by-products from lumber mills and veneer plants and from low-grade logs. Board formation is mostly by batch process, with both wet process and dry process used for forming sheets.

PATTERNS FOR INTEGRATED COMPLETE WOOD UTILIZATION by Edward G. Locke, U. S. Forest Service, Portland—Utilization processes and plants must be completely integrated both among themselves and with the producing forests to attain a degree of intensive forest management which will obtain the maximum of growth capacity of forest lands. The four patterns by which wood utilization may be integrated are: (1) Ownership and operation of forest land by the same company owning and operating utilization plants; (2) Ownership and operation of the forest land by one company and ownership and operation of the utilization plants by another with long-term contracts between the two; (3) Ownership and operation of utilization plants by a company composed of a number of owners and operators of small forest holdings and, (4) A large number of owners and operators of forest holdings selling their product in a general market in a given area to supply a wide diversity of utilization enterprises.

GENERAL ECONOMICS OF WASTE UTILIZATION by Edwin C. Jahn, New York State College of Forestry, Syracuse, N. Y.—Approaches to any new development in wood utilization may be by the producer of primary products such as lumber or plywood, or by the entrepreneur wishing to establish a new industry based on available raw materials. The producer of primary wood products seeks maximum utilization of his raw materials and should keep wood waste as low as possible by efficient conversion to primary products. For the resultant minimum by-products the manufacturer should obtain highest economic utilization. The entrepreneur, interested in the largest available amount of a particular type of wood waste at the lowest possible price for development of a specific industry must survey the market and supply, and also making production estimates and take into account competing factors for these raw materials.

WOOD - HYDROLYSIS PRODUCTS by Elwin E. Harris, Forest Products Laboratory, Madison, Wis. — Carbohydrates for supplementary stock feed, and several by-products of value to agriculture and industry can be obtained from wood previously not utilized. Molasses of 50% concentration, hydrolyzed from wood, has satisfactorily replaced grain in experimental feeding of animals at several state colleges. A 50-ton commercial plant suitable for making molasses of 50% concentration is estimated to cost $500,000, producing molasses at cost of $12 per ton. This product compares favorably to blackstrap molasses, except for a bitter taste, and residue from the process has been found suitable for use as fuel.

WOOD AS A SOURCE OF CHEMICALS by Erwin A. Pearl, Institute of Paper Chemistry, Appleton, Wis.—Wood has the advantage over coal and petroleum as a source of chemicals in that it is the only one of the three replenishable in relatively short time. Hence it is predicted that wood will be one of the chief sources of organic chemicals in the not too distant future. Besides the well-known chemical products from wood distillation are many new chemicals isolated directly from wood distillate which have recently appeared on the market in commercial quantities thus opening up possi-

(Continued on Page 56)

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Air view of Union Bag and Paper Corporation plant at Savannah, Georgia — one of the largest and most modern units in the industry.

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bilities of varied synthetic approaches. In sulfite waste liquor is an enormous potential source of chemicals — the sugar content can be fermented to ethanol, butanol, acetone, lactic acid, or other fermentation products. Western hemlock sulfite waste liquor can be extracted to obtain conidendrin, of value for synthesis of antioxedants. Lignin in sulfite waste liquor can be oxidized to give high yields of vanillin or vanillic acid. Hydrolysis of wood offers another source of sugars and fermentation products similar to those obtainable from the sugars of sulfite waste liquor.

WOOD AS A SOURCE OF TANNING MATERIAL by Harry F. Lewis and M. A. Buchanan, Institute of Paper Chemistry, Appleton, Wis.—The two main commercial sources from which tanning agents have been obtained, quebracho and chestnut, are in limited supply, the chestnut disappearing from blight attack and the quebracho having to be imported. Lignin appears to have prospects of becoming a commercial tanning agent.

DOUGLAS FIR BARK EXTRACTIVES by Harry Kiefer and E. F. Kurth, Oregon State College, Corvallis, Ore.—Successive extractions of representative Douglas fir bark samples with petroleum ether, acetone, and water in that order gave a total extractive content of approximately 30%. Extractives included a wax-like material of which lignoceric acid was one of the constituents; resins, tannins, phlobaphenes and other coloring matter.

DOUGLAS FIR BARK TANNIN by James Hubbard and E. F. Kurth, Oregon State College, Corvallis, Ore.—Analysis of six Douglas fir bark samples showed tannin content varying from 7.6% to 18.3%, the variation depending on the age of the tree and whether the bark was taken from the top or bottom of the tree. The tannin has been isolated by two methods.

PONDEROSA PINE STUMPS AS POTENTIAL SOURCE OF ROSIN AND OTHER BY-PRODUCTS by Arthur B. Anderson, Oregon Lumber Co., Dee, Ore. —Study of ponderosa pine stumps indicates this as a commercial source of rosin acids and other extractive by-products. Pine stumps, seasoned for seven or more years, average about 25% (of the sound portion) acetone soluble extract containing rosin acids, unsaponifiables, terpines, esters and other acidic materials. Removal of stumps for extractive recoveries and other utilization of such products as alcohol, yeast, molasses or fibre products would make the logged areas more adaptable for reforestation practices and advanced forest management.

Cellulose Chemistry Division

Division of Cellulose Chemistry, featuring Lignin Symposium with J. L. McCarthy, University of Washington, Seattle, presiding.

NATIVE LIGNIN by M. A. Buchanan, F. E. Brauns and R. L. Leaf, Jr., Institute of Paper Chemistry, Appleton, Wis.—A native lignin fraction has been isolated, from aspen wood, containing 19.5% methoxyl, 63.2% carbon and 5.9% hydrogen. Treatment of this isolated native aspen lignin with 72% sulphuric acid causes a loss in weight of about 10% and increases the methoxyl content to 20.4% which is in the range normally obtained for sulphuric lignins prepared directly from hardwoods.

THE SULFONATION OF LIGNIN by Holger Erdtman, Royal Technical University, Stockholm, Sweden—By heating wood with strong solutions of sulfite alone or mixed with bisulfite a sulphonated wood was obtained without too large losses of lignin due to the formation of soluble lignin sulphonic acids.

Lignin has groups of different reactivity. Groups A reacts with sulfite in acid, neutral, and slightly alkaline solution; and reacts with phenols in acid solution only. Group B reacts with sulfite in acid solutions only and is not reactive to phenols. Evidence is shown that lignin is linked to carbohydrates in the structure of wood.

ESTABLISHMENT OF THE POLYMERIC NATURE OF LIGNIN, SULFONIC ACIDS by Aaron E. Markham, Quintin P. Peniston and Joseph L. McCarthy, University of Washington —The nondialyzable lignin sulfonic acids of sulfite waste liquor have been fractionated by precipitation of their barium salts from aqueous solution with ethanol. Ten fractions were obtained as precipitates and an eleventh from the residual solutions.

ISOLATION AND CHARACTERIZATION OF LOW MOLECULAR WEIGHT LIGNIN SULFONIC ACIDS by Quintin P. Peniston, Hilda Daniels Agar and Joseph L. McCarthy, University of Washington.

ULTRAVIOLET SPECTROSCOPY OF LIGNIN DERIVATIVES by G. Aulin-Erdtman, Royal Technical University, Stockholm, Sweden—In this field spectroscopic methods are used for determining structure by the ultraviolet spectra. The aromatic nature of lignin in wood has been confirmed by this method. The author's work has been carried out on lignin derivatives. Spectro-chemistry, in her opinion, should not be considered an easy type of determination of elementary structure, since numerous determinations must be made to arrive at definite conclusions.

ALCOHOL FROM SULFITE EFFLUENT AT BELLINGHAM, WASH., by E. O. Ericsson, technical director, Puget Sound Pulp & Timber Co., Bellingham, Wash.—This plant, constructed during the war to alleviate wartime shortage of alcohol, is the only one utilizing sugar contained in sulfite waste liquor as a raw material. Current output of the plant is 8.5—9,000 gallons of 190-proof alcohol per day, 24 gallons per ton of air-dry pulp. By-products from the manufactured alcohol include heads at a rate of 2% of the alcohol production, and fuesel oil at the rate of 25 gallons per day. Production of alcohol and by-products is from three-quarter million gallons of sulfite waste liquor per day.

ULTRAVIOLET ABSORPTION SPECTRA OF SULFURIC ACID SOLUTIONS OF WOOD CELLULOSE by O. Goldschmid and D. W. Balkema, Rayonier, Inc., Shelton, Wash.—Solutions of unbleached wood celluloses show the typical lignin spectrum, and further study reveals rapid formation of hydroxymethyl furfural due to the action of the acid on the cellulose. By modifying the method of preparing the solutions, the rate of furfural formation decreases to an extent which makes possible the spectometric determination of the lignin content of unbleached and partially bleached celluloses.

OXIDATION OF BASIC CALCIUM LIGNOSULFONATE WITH METAL OXIDES by Irwin A. Pearl, The Institute of Paper Chemistry, Appleton, Wis.—A procedure was described for the isolation of pure vanillic acid from the bicarbonate-soluble fraction of lignin oxidation mixtures based upon the solubility of vanillic acid in neutral lead acetate solution.

STUDY OF THE REACTION PRODUCTS OF LIGNIN AND SODIUM CHLORITE IN ACID SOLUTION by J. S. Barton, Central Technical and Research Department, Crown-Zellerbach Corp., Camas, Wash.—Sodium chlorite in acid solution vigorously attacks lignin in the woody structure to give a mixture of low and high molecular weight materials which were characterized and identified in part. These studies added no new information to the structure of lignin but the high molecular weight reaction product may serve as useful starting material for future lignin studies.

LIGNIN HYDROGENATION PRODUCTS by Elwin E. Harris, Jerome F. Saeman, and Clarence B. Bergstrom, Forest Products Laboratory, Madison, Wis.—Two 150 pound samples of lignin recovered from soda process pulping liquors were hydrogenated in continuous equipment, one at 325 degrees C. with copper-chromite catalyst, and the other at 400 degrees C. with tin sulfide and iodoform. In both cases about 70% of the lignin was coverted into volatile products, including gas, water, hydrocarbons, methyl alcohol, ketones, cyclic alcohols, and phenolic compounds. Hydrogenation is considered a possible approach to lignin utilization.

SUBSTITUTES STYRENES FROM LIGNIN VIA VANILLIN by G. B. Creamer, S. Coppick, American Viscose Corp., Marcus Hook, Pa., and E. C. Jahn, New York State College of Forestry.

PREPARATION OF ARYLETHYNYLCARBINOLS by E. T. Clapperton and W. S. MacGregor, Department of Chemistry, University of Portland, Ore.

FUNCTIONAL DERIVATIVES OF LIGNIN SULFONIC ACID by D. M. Ritter, E. D. Olleman, D. E. Pennington and K. A. Wright, University of Washington.

Sugar-Cellulose Chemistry

Joint meeting of division of cellulose chemistry and division of sugar chemistry with W. W. Moyer, Crown Zellerbach Corp., Camas, presiding.

THE CELLULOSE INDUSTRY OF THE PACIFIC NORTHWEST by R. S. Hatch, Weyerhaeuser Timber Co., Longview, Wash.

EFFECT OF THE VISCOSE PROCESS ON SOME BASIC PROPERTIES OF CELLULOSE by R. L. Mitchell, International Minerals and Chemical Corp., Wales, Tenn.

ALDEHYDE CONTENT OF HYDROLYZED WOOD CELLULOSIS by Edwin L. Lovell, Rayonier Inc., Shelton, Wash.

CUPRAMMONIUM - GLYCOSIDE COMPLEXES. SOME REQUIREMENT FOR COMPLEX FORMATION AND THE CONFORMATION OF THE D-GLUCOPYRANOSIDE RING IN SOLUTION by Richard E. Reeves, Southern Regional Research Laboratory, New Orleans, La.

THE HDROLYSIS OF PENTOSANS IN CORNCOBS A CONTINUOUS PROCESS by J. W. Dunning, E. G. Wieland, C. F. Frye, and P. Winter, Synthetic Liquid Fuels Project, U. S. Department of Agriculture, Peoria, Ill.

DETERMINATION OF GLYCOSIDIC METHOXYL by Carroll L. Hoffpauir and Richard E. Reeves, Southern Regional Research Laboratory, New Orleans, La.

THE METHANOLYSIS OF COTTON CELLULOSE by Richard E. Reeves, Wilhelmina M. Schwartz, Carroll L. Hoffpauir, and L. W. Mazzeno, Jr., Southern Regional Research Laboratory, New Orleans, La.

A POLYMER-HOMOLOGOUS SERIES OF SUGAR ACETATE FROM THE ACETOLYSIS OF CELLULOSE by M. L. Wolfrom and E. E. Dickey, Department of Chemistry, The Ohio State University, Columbus, Ohio.

Afternoon session, R. M. Hatch, Weyerhaeuser Timber Co., Longview, Wash., presiding.

REACTION OF PENTOSANS WITH FORMALDEHYDE by J. L. Schwenkler and E. C. Jahn, New York State College of Forestry, Syracuse, N. Y.

END-GROUP DETERMINATION OF AMYLOSE AND AMYLOPECTIN by A. L. Potter and W. X. Hassid, University of California, Berkeley, Cal.—A method for testing the end-groups of amylose and amylopectin has been worked out for which sample runs of one-half or one gram is sufficient. This is based on the quantitative determination of the formic acid produced when the starch fractions are subjected to oxidation with sodium metaperiodate

SIX MIDWEST AUTOMATIC BEATERS SERVING FIVE PAPER MACHINES

THE six Midwest automatics shown above are beating 3 to 5 times as much stock as the same number of ordinary beaters could ever hope to beat—approximately 50 tons each—enough for five machines running specialties.

Each of the first five beaters is serving a particular machine and each is processing a furnish that is an exact duplicate of a previous "master" furnish because all furnishes are automatically controlled. The sixth beater is being used as a spare.

Because one automatic can do the work of several conventional beaters—and because most of the power is used for work rather than just for circulating the stock around the tub—the saving on power is truly impressive.

It may be customary to use 3 to 5 beaters ahead of an average machine—112" or 116", let us say—but it is not at all necessary. One Midwest automatic will with ease beat enough stock for any 112" or 116" machine.

It is costly to install and maintain several ordinary beaters. It is less costly to install one automatic—and history shows that maintenance is very negligible.

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at two degrees temperature. By means of this process the chain length was found to be about three times as long as previously believed.

A DIRECT COLORIMETRIC METHOD FOR CARBOHYDRATES MALTOSE by G. Harvey Benham and Virginia E. Petzing, Illinois Institute of Technology, Chicago—The molybdenum blue reaction as applied to glucose has been extended to maltose in such a way that analysis of mixtures of maltose and glucose may be made. Maltose reacts in conformity with Beer's Law, but gives values which are about one tenth as great as values for glucose under identical conditions. This system can be of use in industry for determining the amount of maltose and glucose in mixture.

PREPARATION AND PROPERTIES OF CELLULOSE PHOSPHATES by J. David Reid and Laurence W. Mazzeno, Jr., Southern Regional Research Laboratory, New Orleans, La.—A method using phosphorus oxychloride and pyridine as the phosphorylating agent has been adopted and a number of cellulosic products containing phosphorus and chlorine have been prepared and analysed. Cloth phosphorylated by this process is substantially flame-and-glow-proof but suffers great loss in tensile strength. Incorporation of cellulose phosphates into a successful flameproofing formula reduces the afterglow, but too large an amount is required to achieve complete extinction of the afterglow.

COMPOSITION OF TWO TYPES OF CELLULOSE PHOSPHATES by J. David Reid, Laurence W. Mazzeno, Jr., and Edmund M. Buras, Jr., Southern Regional Research Laboratory, New Orleans, La.

THE STRUCTURE OF CELLOPHANE MEMBRANES IN RELATION TO RATES OF DIALSIS by Robert E. Davis, Quintin P. Peniston, and Joseph L. McCarthy, University of Washington, Seattle.

REVIEW OF COAST TAPPI SEMINAR

LECTURES ON LIGNIN SUMMARIZED

By Dr. J. S. Barton

Professor Holger Erdtman prefaced his series of four lectures with a general discussion of the methods of elucidating the structure of polymeric materials and showed their possible application to the lignin structure problem. The work of such well known lignin chemists as Klason, Freudenberg, and Hibbert was reviewed briefly. The general conclusion that may now be reached regarding lignin structure is that we are dealing with a building unit consisting of a benzene ring with a three-carbon side chain (C_6C_3 grouping). These building stones are thought to be connected to one another by bonds to both ring and side chain.

The view of one school of lignin chemists that held that lignin is formed during the isolation procedure and does not exist as such in the wood has been definitely disproven by the work of Lange, one of Dr. Erdtman's co-workers. By observing the ultra-violet absorption of the cell wall at 280 mmu. (where lignin exhibits an absorption maximum) he was able to show that the lignin was concentrated in the middle lamella of the cell wall and to be a substance apart from the cellulose.

The biggest handicap lignin chemists face in their experimental work is the difficulty of obtaining an isolated lignin that has not undergone chemical change during its isolation. Dr. Erdtman mentioned cuoxam and thioglycolic acid lignin as being fairly good starting materials for research. The native lignin of Brauns was viewed as being a member of a family of lignins differing by molecular weight or particle size and thus not truly representative of the total wood lignin.

The study of the lignin molecule has been aided by experimentation with closely related materials of known structure and some so-called "model substances," or simple aromatic compounds that are thought to resemble chemically the building units of lignin. The "lignans" are examples of the former; they are substances found in the secretions of living trees and in the heartwood, and are composed of two C_6C_3 units. As model substances, benzyl alcohol derivatives appear to be the most useful, since they react toward sulfite cooking liquor at about the same rate as lignin itself.

DR. BARTON has already distinguished himself at Camas though he has been there only since the first of this year. He has also had a fine academic career, getting his B.S. in 1940 at the University of Washington and his M.S. and Ph.D. degrees at the Institute of Paper Chemistry. He served three and a half years in the Navy, as electronics maintenance officer primarily with submarines.

Dr. Barton is Senior Research Chemist, Central Research and Technical Dept., Crown Zellerbach Corp., Camas, Wash. In this article he summarizes Dr. Erdtman's recent seminar talks on lignin.

Lignin Origin

The origin of lignin in the growing tree is of course a speculative matter. Dr. Erdtman suggested that one possibility might be enzymatic dehydration, wherein simple phenolic compounds are polymerized by the action of enzymes to form lignin.

In the second lecture, the sulfonation of lignin was discussed. This reaction, which takes place during a sulfite cook, is one of the most characteristic lignin reactions. According to Dr. Erdtman's view, in a normal sulfite cook the lignin appears to react with the cooking liquor in two overlapping phases. In the first phase, the lignin in the wood is sulfonated *in situ* to form a solid sulfonic acid. The second stage involves hydrolysis and dissolution of the solid sulfonate, accompanied by further sulfonation of the lignin bodies.

If the solid lignosulfonate is converted to the free acid by base exchange and cooked with water, about half of the lignin is solubilized, illustrating the hydrolysis step. Coincident with the introduction of each sulfonic acid group into the lignin molecule, one hydroxyl group disappears. The maximum number of sulfonic acid groups that may be introduced seems to be about one for each C_6C_3 unit while the minimum number necessary to render the lignin soluble in the cooking acid is about one for each four C_6C_3 units. The ultraviolet absorption spectra of native lignin and lignins sulfonated to various degrees are nearly identical so the reaction is not accompanied by any extensive change in structure.

The difficulty experienced in pulping the heartwood of pines by the sulfite process was the subject of the third session. Dr. Erdtman has recently unravelled the mystery of this puzzling phenomena with his discovery of the phenolic compound "pinosylvin," and its derivatives, in pine heartwood. He was able to show that these materials, although occurring in small amounts, inhibited the sulfite cooking reaction.

There are approximately 80 species of pines in the world, and all the 30 to 40 tested to date contained pinosylvin. These substances also seem to be in part responsible for the resistance of the heartwood to decay and one would expect the healthier trees to contain more pinosylvin than the average. Pinosylvin may be detected in wood by a simple color test and Dr. Erdtman suggested that all trees selected for seed be tested in this manner.

Many aromatic compounds have been found that (such as resorcinol, pyrogallol, phloroglucinol, aniline) will inhibit the sulfite pulping of chips impregnated with these materials. According to Dr. Erdtman, these compounds condense with lignin in a manner analagous to a phenol-formaldehyde condensation, thus making it less reactive.

Pulping Problems Elsewhere

The heartwood of Douglas fir is difficult to sulfite pulp due to the presence of another phenolic substance, "taxifolin."

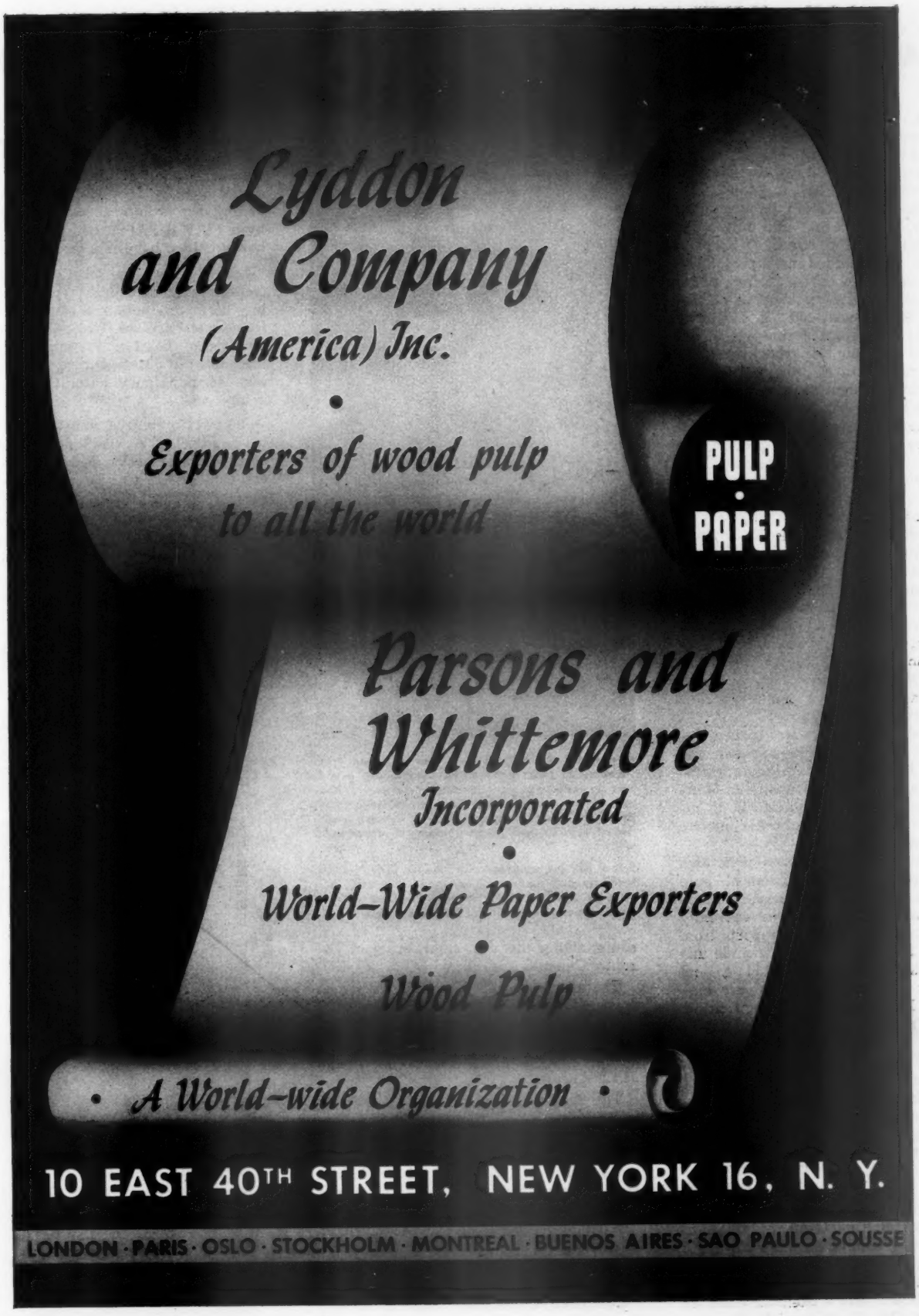
A curious problem in Sweden arises seasonally when the waters of the streams used to float logs are warmer than normal. The wood is permeated with tannins leached from the bark and high screenings are obtained in the sulfite pulping of such wood.

In Finland, the ultimate solution to the problem of the sulfite pulping of pines was found in the actual hand-sorting of heart and sapwood chips under ultraviolet light. The strong fluorescence of the extractives in the heartwood served for identification.

Dr. Erdtman concluded his seminar series with a discussion of other crystalline, identifiable compounds which occur in minute amounts in various woods. These materials may be waste products of the trees metabolism or occur as natural preservatives against diseases and insect. The latter are probably of the greatest practical interest because of their antibiotic properties. As an example, three isomeric phenolic compounds possessing a unique seven-member ring structure have been found in western red cedar. They have shown exceptional antiseptic characteristics and although these compounds and laboratory curiosities today, knowledge gained from a study of their structure and properties may be of aid in the development of new weapons of chemical therapy.

Publishers' Paper Addition

Publishers' Paper Co., Oregon City, Ore., will this month complete an extensive abutment building project at the Willamette River falls, immediately upstream from Mill A, according to Carl E. Braun, vice president and mill manager. This project, started last July, essentially consists of replacing timber structures in the river with a permanent concrete headwall to divert water to the grinders for powering these machines.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A MILL IN HEART OF MEXICO

"La Aurora" Makes Groundwood and Paper

"La Aurora, S. A., Fabrica de Papel," located in the industrial "Colonia Obrera" (Workers' Quarter) in Mexico City, was one Mexican paper industries recently visited by **PULP & PAPER**. The mill is close to the heart of the metropolis, practically "down-town," and only a few minutes from the Cathedral.

The mill was founded at its present location 23 years ago by the owners of the most popular stationery shop in Mexico City, the 50-odd-year-old "El Lapiz del Aguila," at a time when shortage of paper needed for their blank book, pad, and envelope manufactures prompted them to create an independent source of supply.

A 62-inch Fourdrinier of Swiss origin was set up and it is still operating. The original owners sold their property in 1945, and the present stockholders have been carrying a slow but firm reconditioning policy. Thanks to these efforts, quality of production has been stepped up. The present output averages 22,000 lbs. a three-shift day and includes book, magazine, bond, manila, wrapping, blotting, and printing paper.

A groundwood mill was purchased in Sweden in 1934 to make the mill independent on that score. Groundwood production ranges from 13,000 to 25,000 lbs. a day and is used mostly in the manufacture of manila and wrapping paper and colored cardboard.

The wood used is short-leaf spruce, averaging six to ten inches in diameter, and purchased by the "cuerda" (amount embraced by a cord or rope), which in Mexico equals 106 cu. ft. or a stack of 20-inch wide chips piled up three meters long and two meters high.

While the plant has facilities of its own for soda pulp and semi-chemical pulp (16,000 lbs. each in 24 hours), groundwood is the only raw material currently produced in the mill itself. Imports from the United States and Sweden include unbleached and bleached sulfite and bleached kraft pulp. About 60 are employed in "La Aurora" mill. Electricity is purchased and there are two boilers for power.

Alphonse Desdier, the company's president and chief stockholder, is a Frenchman well known among Mexican industrialists, for he has headed a number of cotton mills, textile plants, and a large department store in Mexico City for many years.

Manager of La Aurora is M. Desdier's brother-in-law, H. Carlos Kinkel, who came to Mexico from Germany 26 years ago as a young man of 20. He looks back to a long experience in industrial management in a cotton mill in Torreon, Northern Mexico, and a chemical plant in Mexico City. Mr. Kinkel and M. Desdier are married to Mexican sisters. Mr. Kinkel speaks excellent English and has a son studying chemical engineering in Toronto, Canada.

H. CARLOS KINKEL (above), who migrated from Germany 26 years ago and has had a long experience in industrial management in Mexico, is Manager of "La Aurora" Paper Company in Mexico City. He stands beside a typical pile of oyamel, short-leaved spruce, used in his company's groundwood mill.

Below are his principal aids: JULIO COLON (left), Secretary and Accountant and quite a linquist, and FERNANDO LUSARRETA, Technical Manager with 40 years' experience in mills of Mexico and Spain.

The mill technical manager is Fernando Lusarreta, with 40 years of paper mill work behind him both in Spain and Mexico. He left a superintendent's position in Spain eight years ago to take over his job at La Aurora.

The secretary and accountant for the mill, Julio Colon, is a linquist speaking English, French and German in addition to his native Spanish. He was previously employed in Mr. Kinkel's chemical plant and has been living in Mexico since the end of the Spanish Civil War.

When the present stockholders bought the mill, they also acquired a few companies owned by the same business group. These are:

Compania Comercial Papelera, S. A., the distributors of La Aurora's paper and big importers of pencils, erasers, ink, and general stationery and school items, with over 1,500 regular customers throughout the Mexican Republic. The company's retail store is the famous "El Lapiz del Aguila," visited at the beginning of each school term by a swarm of boys and girls yelling for prompt service, as witnessed by a **PULP & PAPER** editor, while neighboring stores have less crowded counters.

Sobres Mexicanos, S. A., an envelope factory, using La Aurora's paper and selling their production through Compania Comercial Papelera. While their chief line consists of bond and manila envelopes, they also put out cardboard tags for mailing use, and fancy letter paper-and-envelope sets.

A newly organized company is Productos de Papel, S. A., handling the manufacture of blank books, pads, ledgers, folders, etc.

There is every indication the "La Aurora" and its affiliated companies will continue to prosper and grow, as the public consumption of their goods has been steadily increasing. There is a project to bring the different processing factories and the wholesale offices under one roof in a building to be raised at the mill site, with 13,500 sq. ft. of space on each of its four floors for converting equipment, storage and office rooms.

TOP VIEW SHOWS a small paper machine in a Mexican mill and below is a rosin cooker developed in Mexico and used in a mill to prepare its rosin. It uses soda ash for cooking and has overflow system to return ingredients.

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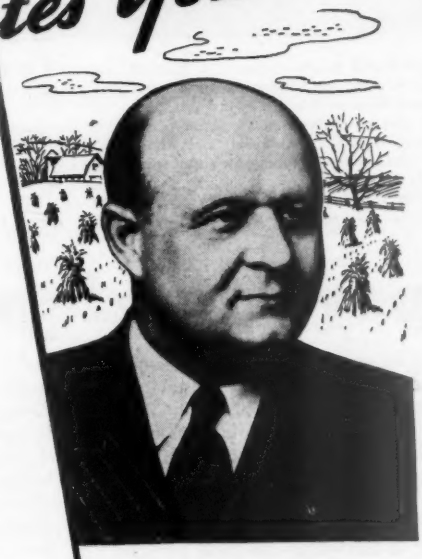

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UNION PACIFIC RAILROAD

Road of the Daily Streamliners

In the PULP & PAPER photo above T. C. Wescott, president of Ebasco Services, Inc., points out the New York sights to Mrs. Kusum Nair, managing editor of "India", and her husband, Pran Nath Nair, managing director of The National Newsprint and Paper Mills, Ltd.
The occasion was a luncheon at the Bankers Club for the visitors. Among those present were H. D. Gregson, Chief Engineer, National Newsprint and Paper Mills; F. C. Gardner, Vice President, Ebasco; C. A. Harwick, Manager of industrial engineering for the same company; A. P. Schnyder, Consulting Engineer for the company; William J. Crittenden, F. J. Rudden, A. L. McCloskey, of Westinghouse Electric International Co.
The new mill is scheduled for completion by the end of 1949 about 326 miles northeast of Bombay. (For further details of this mill and the industry in India see page 44, September PULP & PAPER.)

Superintendents' Meet

What the experts termed "the best Superintendents' meeting yet" came to a rousing finish on Saturday, Sept. 24th, with a midnight snack at Poland Springs House, Poland Spring, Me. Preceding it had been three full days which included everything from golf and bridge to a serious business meeting and a costume ball.

Chairman of the event—the fall meeting of the Northeastern Division of the American Pulp and Paper Mill Superintendents Association—was Jack F. Wright.

George Knapp, General Electric Co., spoke on "New Developments in Electrical and Electronic Applications to Paper Manufacture"; and Charles Muzzy, E. D. Jones and Sons Co., discussed "Stock Preparation with Reference to Qualities Acquired and Power Consumption." The afternoon session was a round-table discussion of cost reduction among members of the Fourdrinier and board groups. Discussion leaders were George Fuller, J. D. Hierlihy, Albert Bachmann, and Ollie Messner, president of the national association.

Slime Control Talks

Featuring "Slime Control," the Nov. 16 meeting of Pacific TAPPI at Camas, Wash., gathers together five authoritative papers covering the field, treating the subject from (1) theoretical approach, (2) chemical suppliers angle, and (3) practical attack and application in the mill.

Among the papers lined up are: "Commercial Developments of Slimacides," by F. A. Soderberg, General Dyestuff Corp.; "A Method for Determining the Rate of Slime Accretion in Paper Mill Systems," by Dr. J. W. Appling, Buckman Laboratories, Inc.; "General Considerations on the Growth and Death of Bacteria," Prof. E. J. Ordal, U. of Washington, department of microbiology; "Requisite Considerations for Good Slime Control," jointly authorized by G. D. King, paper products division of central research and technical department of Crown Zellerbach Corp., and J. V. Venables, C-Z chemist. The fifth paper to be presented had not been named as **PULP & PAPER** went to press.

In addition to panel members presenting the papers, representatives of slime-control chemical firms and manufacturers will be present to facilitate the question-answer-discussion period to follow the group of papers, according to G. D. King, moderator for the session.

Materials Used In Fernstrom's New Machine

Additional items of equipment not yet reported in full at the recently expanded Fernstrom Paper Mills, Pomona, Calif., include suction box covers of strip maple, end-of-grain maple and Ryertex combination use. Monel is used for the box of the suction boxes in the No. 3 machine and for the saveall trays in the Fourdrinier. Fourdrinier rails and beams are also clad with Monel sheet.

Wet end rolls—wire rolls, wire stretch rolls, guide rolls, table rolls and felt carrying rolls—are all made of hard rubber covering with a P and J densimeter of about three.

50 Per Cent ECA Procurement From North of Border

Approximately 50% of the ECA procurement authorizations for pulp and paper will be from Canada and Newfoundland, according to advices received by the Canadian industry in Montreal.

Up to August 16, a total of $12,400,000 had been authorized for the purchase of pulp and paper, and of this Canada and Newfoundland will supply approximately $6,000,000 worth, of which woodpulp for the United Kingdom represents about $5,500,000.

Bizonia has been authorized to receive $2,200,000 of rayon grade woodpulp to be supplied by Sweden.

Here are some of the details of the ECA orders:

Commodity	*Authorized To*	*From*	*Value*
Woodpulp,	United Kingdom,	Canada and Nfld.	$5,500,000
Newsprint,	Bizone Germany,	Sweden	1,434,000
Woodpulp,	France,	Canada	371,000
Waste paper,	France,	United States	22,350
Groundwood pulp,	Bizone Germany,	Sweden	888,000
Groundwood pulp,	Bizone Germany,	Finland	488,000
Waste paper,	Bizone Germany,	United States	33,000
Paper products,	Bizone Germany,	Netherlands	300,000
Electrical pressboard,	France,	United States	20,000
Woodpulp,	Greece,	Sweden	170,000
Newsprint,	Greece,	Sweden	210,000
Mech. woodpulp,	Bizone Germany,	Sweden	339,000
Rayon grade pulp,	Bizone Germany,	Sweden	2,210,000
Bleached cotton linters,	Bizone Germany,	United States	128,000
Bleached cotton linters,	Bizone Germany,	United Kingdom	128,000
Pulpwood.	Netherlands,	Cadada	140,000
TOTAL			$12,381,350

Riegel Employes Set A Safety Record

Employes of Riegel Paper Corp.'s Hughesville (N. J.) mill, recently awarded first place honors among mills of similar size, have since extended their perfect safety record beyond the period of the contest to score 342,378 man hours without a lost time accident. The record covers 474 days. The accident frequency rate at Hughesville was zero for the period of the latest National Safety Council contest, from July 1, 1947, to June 30, 1948.

FRED C. GOODWILL whose appointment as Resident Manager of the Kalamazoo mill of St. Regis Paper Co., has just been announced by Roy K. Ferguson, president of the company. Succeeding Mr. Goodwill as Technical Director of the Central Laboratory of St. Regis, at Deferiet, N. Y., is John H. Heuer. Peter J. Massey, formerly Resident Manager at Kalamazoo, is now Chairman of the company's New Products Development Committee, with headquarters in New York City.

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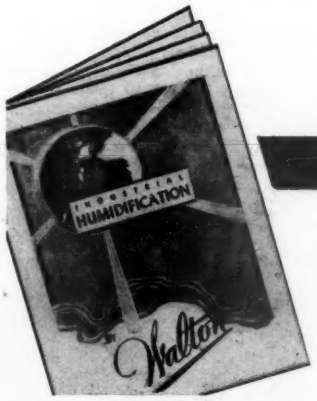

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Logging Pulpwood

PULP LOGGING DISCUSSION

At Ironwood Helpful to Industry

There were many opportunities for small and large operators alike to learn of trends toward more profitable and protective means of harvesting all types of forest crops. There was free expression of mutual help between land owner, camp operator and industry men. There was news of development from the equipment plants, from field reseach and from laboratory. Combined informally as they were, they made a successful three-day affair in late September of the third annual Lakes States Logging Congress held at Ironwood, Mich.

The congress was sponsored by the Timber Producers Association of upper Michigan and Wisconsin. Gordon R. Connor, of Wakefield, Mich., is president of the association and presided at each session. Final registration soared over the 500 mark and the attendance at each meeting held very well.

Because the operators of this region produce great yields of pulpwood, each panel discussion and each speaker touched considerably on this phase of logging.

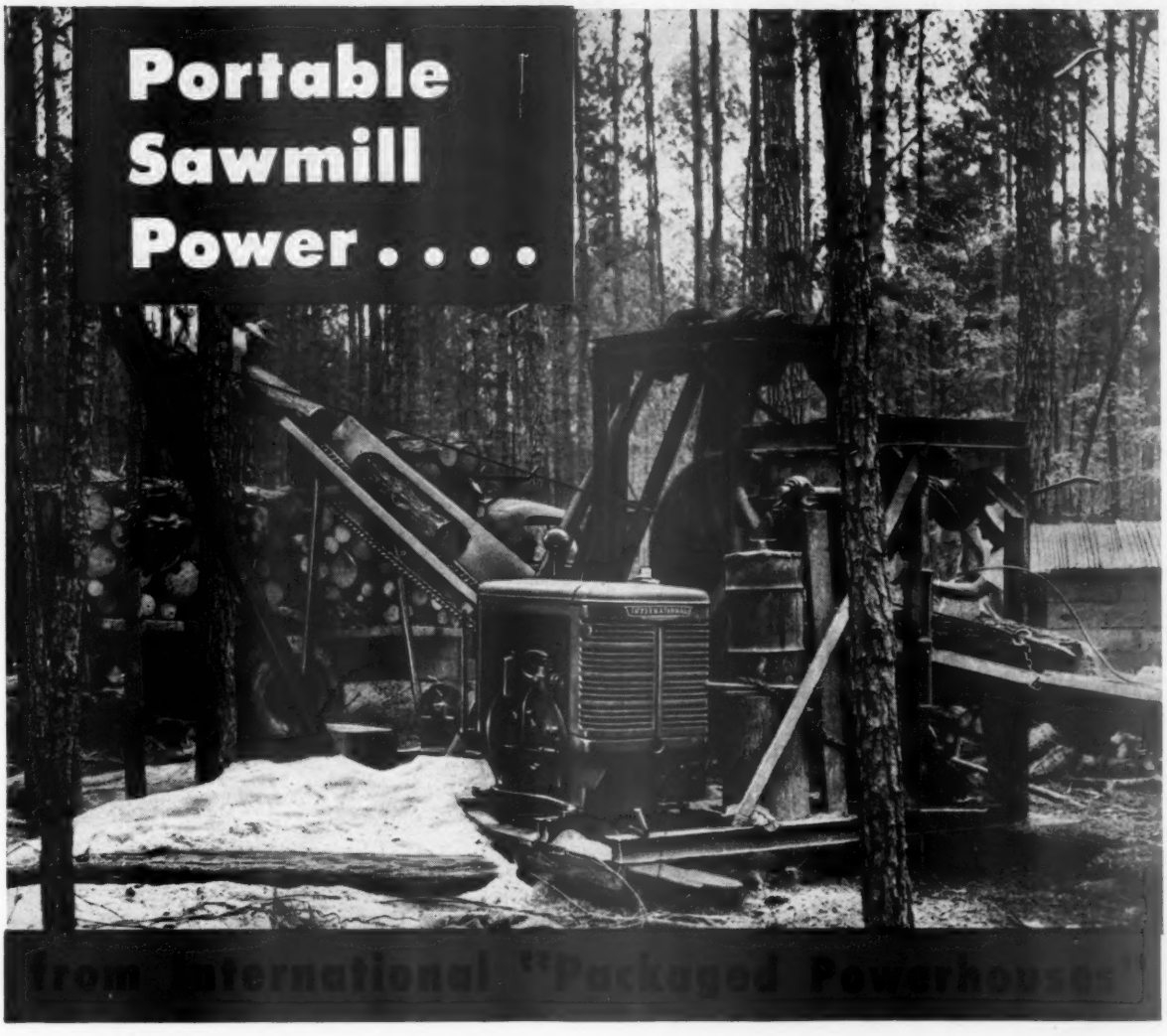
One of the first speakers on the program was F. G. Wilson, director of the division of cooperative forestry, Wisconsin Conservation Commission. He brought to land owners and forest harvesters some of the results obtained by controlled timber harvesting and by use of regulatory legislation. He stressed the kind of regulation that is astute and helpful, one that is mutually desired by the industry. One interesting point brought out by Mr. Wilson was the availability of seedlings for planting by any land owner. The commission makes a small charge for these plants. He cited how, when they gave these away there was less planting and less care of the crop than when they charged for the same. He brought out some interesting figures on an experimental acre planted by his commission. The first thinning produced 5.8 cords of pulpwood and by the time the second thinning took place, the yield was 6.7 cords. The crop still stands and has 430 trees on the acre, having already yielded the 12.5 cords of pulpwood.

Mechanized Selective Logging

High point of the Friday afternoon session was a roundtable discussion, open forum, of the advantages and disadvantages of tree length logging. On the rostrum were E. J. Anderson, woodlands supervisor for Marathon Paper Co., who resides at Houghton, Mich.; Harry Aldridge, of R. Aldridge Inc., Mohawk, Mich.; G. R. Connor, Connor Land & Lumber Co., Wakefield; Frank Young, Brebner Machinery Co., Geo. Carr, Pacific Car &

LEADERS AT IRONWOOD, MICH., (Left to right) JOHN HOENE, Executive Secretary, Minnesota Timber Producers Association; HOWARD PALMQUIST and E. J. "Swede" ANDERSON, Marathon Corp. Woodlands Superintendents.

PROMINENT MEN AT TIMBER AND EQUIPMENT meeting in Ironwood, Mich., (Left to right) FRED AHO, independent pulp and timber producer with large holdings in upper Michigan. Aho pioneered the use of snatch blocks and sulky equipment for logging in his area. ARTHUR GREDLER, represented McCulloch Motors of Los Angeles; JOHN McDONALD spoke on two-way radio in the forest industries.



Portable power is a necessity here. The International U-6 Power Units used to drive these portable set-ups for the Walker, La., Division of the Gaylord Container Corp. ideally fill the bill. They deliver efficient power and are easily portable.

The saw and loading devices are specially built for pulpwood operations. The logs are winched up to the saw, cut in 5-foot lengths, and conveyed to waiting trucks. The units, being easily portable, are set up at roadside locations so the trucks need not enter the woods. Because of the efficiency of the International engines, these machines add profits to pulpwood production.

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Foundry Co., and Leland W. Hooker, timber technologist.

This discussion first developed the advantages of mechanization of a specific type, using tractor, winch and sulky to do selective logging, including pulpwood reaping. Some of the smaller operators were concerned with the initial investment of equipment for this kind of logging. Some felt that their stands were not sufficient to make the repayment of the investment possible. Others cited how they were individual businessmen and had to make improvements pay and that within 90 days this mechanized investment had paid them dividends.

Figures from a typical stand showed that at the end of one year, there had been a 20% net gain in production after the men in the woods became better versed in the operation of the equipment. It was pointed out that education in this method is essential from the operators to the workers.

Cost Session

Following this panel, William Bromley of the Bromley Forestry Agency and C. J. Heslet, Acme Steel Co., Chicago, demonstrated the equipment and methods of steel banding of pulpwood, both lengths for pulp and shorter pieces that go into the chemical plants.

This discussion stressed costs. Many felt that surveys should be made to see how much advantage was gained by the mills in handling these bundles after they reach the stock piles. If there was enough saving in the handling, some of the operators felt that the mills might share in the costs of the steel strapping. Heslet showed the strapping tools and various methods of bundling.

MEMBERS OF THE LOGGING PANEL (Top, left to right), GEORGE CARR, Pacific Car and Foundry Co.; E. J. ANDERSON, Marathon Corp.; DR. H. GARLAND; G. R. CONNOR, President, Timber Producers Assoc.; LELAND HOOKER, Forest Products Research Division.

(Bottom) Safety plaque awards are shown. (Left to right), MR. ORGANIST of Corrigan and Organist; GEO. CORRIGAN, of the same firm; ED ANDERSON, Underwood Veneer Co.; G. R. CONNOR, and R. O. HELBERG.

At a later session, John H. McDonald, Motorola Radio Corp., discussed two-way radio in the forest industries.

The Saturday session featured equipment demonstrations for sawlog and pulpwood logging. These were held north of Wakefield near the Presque Isle River.

Exhibits were open all week at the Gogebic County Fairgrounds.

Insect-Killed Wood Studies

Madison Wis., Laboratory Results

Investigations have been made at the U. S. Forest Products Laboratory in Madison, Wis., to determine the suitability for kraft pulp of insect-killed lodgepole pine.

In several recent articles in **PULP & PAPER**, attention has been called to the fact that millions of board feet of this dead and dying timber in the Forest Service lands in the Rocky Mountain States will soon be worthless unless salvaged.

In the work at Madison, six types of pine consisting of three age classes of green-cut wood and three classes of insect-killed wood, dead standing, dead standing, dead down and dead wolf trees obtained from western Montana, were studied.

Work is under way on standing dead (insect-killed) jack pine and infected old-growth Douglas-fir logging and sawmill residues from the Pacific Northwest. The dead jack pine sample is typical of dried-out dead material standing on the Superior National Forest of Minnesota. The Douglas-fir logging waste is typical of the large volume of materials infected with the white pocket rot (*Fomes pini*) that is left on the ground following logging operations.

Data on the dead lodgepole pine showed very little difference in weight per cord, density, and other physical characteristics of the wood from those of sound green-cut wood of the same age class. In fact, the density of some rapid-growth green-cut material was even lower than that of the dead wood even though some of the dead material (dead down) contained a considerable proportion of visible decayed wood.

Except for the slightly higher alkali solubility of the insect-killed material (which is an indication of the extent of decay) the data obtained on chemical analysis of the wood gave practically no indication of a likelihood of obtaining either lower pulp yields or quality from the dead material. The sulfate pulping experiments confirmed this and the amount of chemical required for pulping was the same for the dead as for the green-cut wood.

Though it was found, in general, that the over-all strength properties of the kraft pulps made in the Madison laboratory from sound dead lodgepole pine were very similar to those from green-cut wood, pulping tests on dead wood containing an estimated 28.7 per cent of advanced decayed wood resulted in some decrease in pulp strength.

Owing to the low moisture content (20%) of the dead wood in comparison with that (42 to 45%) of the green-cut wood, the drier and lighter chips of the former do not pack so well in a digester. Therefore, the pulp production rate for the dead (dry) material would tend to be considerably less than that for green-cut wood.

Groundwood pulping experiments were made on sound wood from the green-cut and standing dead lodgepole pine. Compared on the basis of the same energy consumption or the same freeness, these groundwood pulps were of equal or better quality than those of slash or loblolly pine previously tested. Compared with green and dry spruce on the basis of nearly equal grinding conditions, the lodgepole pine ground at about the same rate with about the same energy consumption, but the freeness of the pulps from the pine was slightly higher and the strengths 25 to 30% lower. Under comparable condi-

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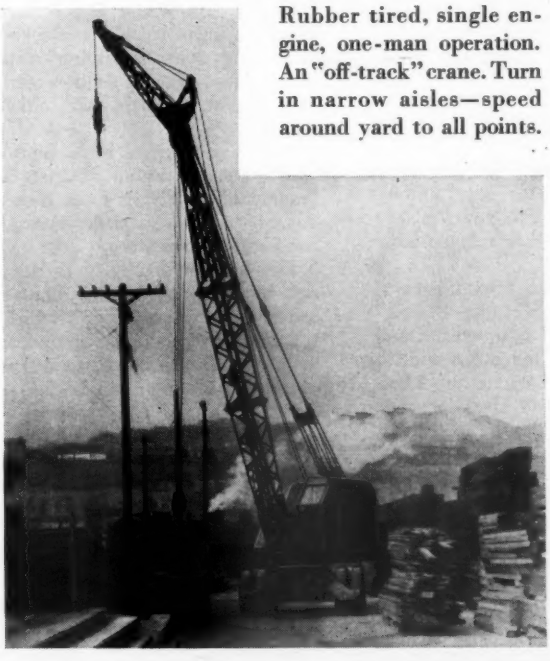

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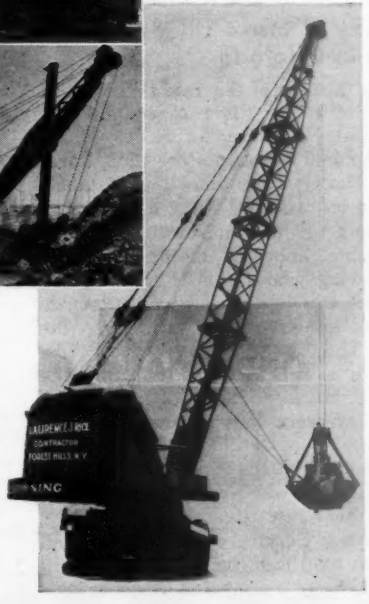

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BROWNING LOCOMOTIVE, WAGON TRUCK and TU-CONTROL *Cranes*

THIS PICTURE TAKEN in the White River National Forest, Colorado, shows a typical Engelmann spruce stand on which the bark beetles had killed or were in fully 90 per cent of the total volume of the stand by 1944 when the picture was taken. By 1946, 100 per cent of the trees 10 in. in D.B.H. and above were dead.

tions the green-cut lodgepole pine wood ground at a slightly lower rate and consumed more energy, and the pulp was slightly longer-fibered and had higher freeness and strength than the standing-dead wood.

A History of Insect-Killed Timber in Colorado

A brief history of the insect-killed timber on the White River National Forest in Colorado is given by H. C. Hilton, acting regional forester of the U. S. Forest Service Rocky Mountain Region in response to inquiries by **PULP & PAPER**.

In 1939 a severe windstorm blew down considerable timber in this forest. During the following years when Forest Service personnel was reduced because of the war, the insects started attacking this timber. They went undetected for several years, said Mr. Hilton, during which time they increased to epidemic proportions. They were first discovered in late 1942 after a considerable volume of timberd had been attacked. They were discovered during war years in inaccessible parts of the White River Forest.

The Forest Service constructed a timber access road into the main body of the timber and started logging it as quickly as possible.

The insects had such a good start that they have spread throughout much of the White River National Forest and parts of adjoining forest in Englemann spruce stands. At this time, it is estimated that there is approximately 2½ billion feet of Englemann spruce timber that has been killed by insects on the White River Forest. Salvage operations were started immediately, says Mr. Hilton, but the total volume removed was small because of short logging season, coupled with the lack of necessary roads.

The first few years after the timber is killed, it is satisfactory for saw timber, but after the third or fourth year, it season checks so badly that it is only suitable for pulp.

"We have been in contact with several of the paper mills in the Lake States," said Mr. Hilton, "trying to interest them in obtaining this timber for pulpwood. A representative was sent back to the Lake States in the fall of 1946; he, together with a representative from the Forest Products Laboratory, contacted the paper mills and explained the possibilities of using Colorado spruce. The paper mills responded by sending representatives to look over the timber chances. A year ago Mr. Nelson from our Division of Timber Management met in Chicago with representatives of paper mills and the railroads to work out a suitable freight rate. A rate that is fairly comparable to the rate for Montana spruce was worked out at this meeting.

"Since then, the paper mills have been interested in Colorado spruce, but they have been slow to commit themselves in executing sale contracts," continued Mr. Hilton. "This is due largely to the fact that our Colorado operators are not used to cutting pulpwood and prefer to cut sawlogs as long as they can. At the present time, a contract is being executed with the Consolidated Water Power and Paper Co. of Wisconsin for a sale of pulpwood on the White River Forest. Three separate units have recently been advertised and sold, involving a total of 30 million feet of dead timber, some of which will go for lumber and some for pulpwood."

Paper industries have contended that they want the timber. But so far industry leaders and officials have been unable to get congress to provide emergency funds for logging roads, etc.

The biggest difficulty to the salvage of this big body of dead timber at the present time is the lack of timber access roads. "We are recommending a large program for the construction of this type of road into the main bodies of timber," said Mr. Hilton.

The actual salvaging of this dead timber has been slow compared with the total volume involved. The salvage of this dead timber is considered the most important objective in the Timber Management field in that region, he said.

Grinders Installed At Red Rock Mill

Three magazine grinders are being installed at the Red Rock, Ont., mill of the Brompton Pulp & Paper Co., and Mill Manager F. D. Taylor advises **PULP & PAPER** they will probably go into operation early in November. Capacity will be about 75 tons of groundwood daily. Most of the pulp will be used in corrugating board, but a small surplus will be sold on the open market.

TEAR OUT

MECHANIZATION MEANS

MORE PULPWOOD!

"40% MORE WOOD PER MAN WITH CARCO TRACTOR LOGGING EQUIPMENT" REPORTS ONE NORTHEAST PULP LOGGER

One big Northeast pulp logger reports that mechanization has stepped up pulp log production by 40% more wood per man. The tractor logging equipment and the portable high-lead decking system shown here get much of the credit. The high-speed CARCO "R" Hoist supplies the pull for steady log gathering in all kinds of weather.

"The portable high-lead system just can't be beat" for gathering logs over rough terrain or marshy land, and especially in clear cutting operations. In stands inaccessible to vehicles, your hoist high-lead system equips you with a powerful arm to reach out and pull in the logs regardless of ground conditions.

High production is essential to profitably log small timber such as pulpwood and the fast line speeds of the "R" Hoist give you the additional logs to make up for lack of size in timber. Tractor mobility minimizes down time. This Northeast logger moves the set-up several hundred feet and resets in only 20 minutes.

Note: Route this ad to the woods manager

PACIFIC CAR AND FOUNDRY COMPANY
RENTON, WASHINGTON U·S·A

CARCO

Como Ca Va Canada?

(Continued from page 36)

and bleached pulp for bond on No. 5, and newsprint on four machines. A big masonite plant, a fiber board plant, a plywood plant and—soon to be operating—the biggest and most up-to-date sulfite effluent alcohol plant in the world, are the other plants at this extensive industrial enterprise on the Gatineau, just about seven miles from Ottawa. There are jobs here for 2,400 people just in these plants alone. Almost every part of the wood that comes in is made use of, someway, in these varied operations. They are all owned by I. P. except the alcohol plant. This plant is one-third again as big as the one built during the war by Puget Sound Pulp & Timber Co., and goes several stages beyond that plant in Bellingham, Wash., and thus is designed to make a high quality industrial alcohol.

Equipment was almost all in, when it was visited by **PULP & PAPER**. I. P. supplies steam and effluent to the alcohol plant, which is owned by Commercial Alcohols, Ltd., of Montreal, headed by C. G. Kertland. There is no SO2 recovery, as at Bellingham. This is the second sulfite liquor alcohol plant in Canada—the third in a North American mill. The first was at Ontario Paper Co., Thorold, Ont.

Many of these eastern Canadian mills were adding flat screens and rifflers and doing more screening to upgrade pulp. Sherbrooke Machineries have done much of this work.

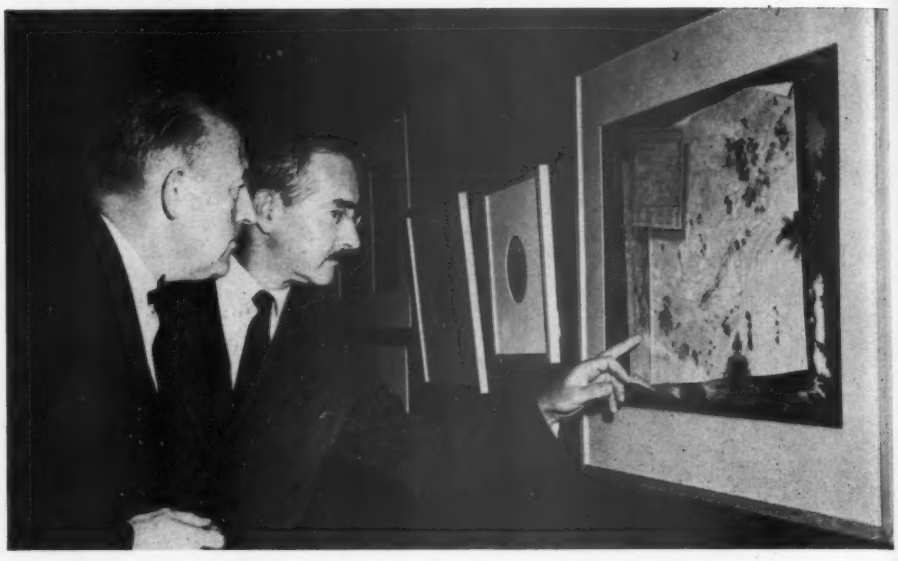
An interesting trend is the installation of impressive big new grinder rooms, Waterous grinders, of the horizontal type, have been staggered to fit in a smaller space than usual at Murray Bay, Quebec. Iriquous Falls, Ont., is site for one of the most impressive Waterous grinder layouts. Three Rivers has put in new big grinders. The important point about the new big Waterous grinders is that they get more pulp production per stone in approximately the same space.

Recovery boilers are being added and there have been many fiber savings and other improvements which **PULP & PAPER** will report in future issues.

As for the labor situation, base pay in eastern Canadian news mills is now $1 an hour. Some bond mills are somewhat lower. When the rates come up for review next May again, it is hoped the AFL unions, which have for many years been parties to the negotiations, will see the need for curbing the dangerous point to which inflation is leading AFL unions have generally handled their problems in Canada with intelligence. Nearly all the unions in mills are AFL but there are a few Catholic syndicates.

A group of Ontario news mills generally set the wage pattern just with their lead-off negotiations. Then the five Canadian International mills set their rates in a separate parley. Bond paper and news groups in the different provinces have their group negotiations.

I. P. ANNIVERSARY BOOK



WILLIAM A. HANWAY (left) Secretary, International Paper Co., and BORIS ARTZYBASHEFF, nationally known artist, inspect the original drawing for the endpapers of, "International Paper Company After Fifty Years," a book honoring the company's half-century of progress. This drawing is by Mr. Artzybasheff, one of five outstanding artists who contributed to the book.

This fall occurred one of the most important publishing events to take place within the history of the pulp and paper industry of the U. S. and Canada. It was publication of the book "International Paper Company After Fifty Years," a portrait of the well known organization which this year (page 28, August, 1948, **PULP & PAPER**) celebrated half a century of progress through perilous and difficult times.

As pointed out by John H. Hinman, president of IP, the book was issued "as a tribute to the thousands of men and women who have helped build 'the world's greatest paper company' and as a source of inspiration as we move toward the future." The sincerity of the president's words were proven by the fact that at least 10,000 copies were printed in French for the benefit of French-Canadian employees of the company. A copy went to every employee in Canada and the U. S. and to stockholders who now number almost as many as the employees.

A real publishing accomplishment, the book created a furore in graphic arts circles in eastern centers. Scores of prominent magazine and book executives attended a party to see a display of the original drawings and plates and photographs which went into the book. All color work was done in offset lithography, while the end papers and photos were sheet-fed gravure and letterpress. The latter was used in printing the text. Among the prominent artists involved in the work was Artzybasheff, and the typography and design was by L. J. Ansbacher. The paper was Ticonderoga offset made at IP's Ticonderoga mill. The book is set in the Monotype cutting of Baskerville. The first edition—and there may be no reprinting—was said to be more than 100,000 copies.

PASC Members See C-Z Film

The September bi-monthly dinner meeting of the Paper Makers and Associates of Southern California had another full crowd in attendance. Bruce Brown, Jr., recently elected chairman presided, assisted by John Doering, secretary. Both are with Fibreboard Products, Los Angeles.

Featured speaker was Cloyd Hammers, chief engineer, Petr-O-Fire Co., Los Angeles, developers of new methods for quick drying of paper.

An added attraction was a Crown Zellerbach colored motion picture featuring the Curtis Publishing Co.'s operations, starting with C-Z's contribution of the basic lumber activities through to printing of the national publications.

Bob Stevens, manager, Angelus Paper Co. was chosen as chairman of the Cunningham award contest this year. Oscar Bigler, Volney Felt Mills, relinquished his duties as program chairman, due to business reasons and John Van Ounsem, Pioneer-Flintkote took over.

Following Mr. Hammers paper considerable discussion was held, led by a panel of four, including Alonzo Hatch, Container Corp., Claude Sharpe, West Coast Paper Mills and two visitors from the Los Angeles Gas Co.

OLIVER
Ringvalve
FILTERS

BEST

for SULPHATE WASHING

for SULPHITE WASHING

To back up the claim of "best"—which some may challenge—we offer the following operational advantages:

1 Oliver Ringvalve Washers permit efficient operations with lower consistency feed, thus promoting more uniform and better sheet formation, which results in better washing. High hydraulic capacity does it.

2 Multi-stage washing plus re-washing can be done on fewer units and with less pumping and accessory equipment when used as two-stage units.

3 Either single-stage or two-stage washing on single unit optional.

4 Central location of valve minimizes flow friction.

5 Ringvalves can operate with barometric leg, producing maximum vacuum at the sheet.

6 Greater safety factors in design and construction result in low maintenance.

The Oliver Ringvalve Filter has well-earned its high record of acceptance.

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Orillia, Canada

Factories: Oakland, Calif. • Hazleton, Pa. • Orillia, Canada • Melbourne, Australia

Personals

CANADA

ELLIOTT M. LITTLE, president and general manager of Anglo-Canadian Paper Mills in Quebec, and of Anglo-Newfoundland Paper Mills (owned by London Daily Mail) in Grand Falls, Nfd., made a trip to South America in October. In his absence, *W. E. SOLES,* assistant general manager in Quebec, is in charge in the headquarters.

RUSSELL J. HOPKINS, who had only for a short time been specialty mill superintendent of the E. B. Eddy Co. division at Ottawa, Ont., was critically injured when struck by a street car in Ottawa. He has been in a Montreal hospital for a long time. He was formerly at Thorold, Ont.

JOHN C. MONTY has been on leave for several months as manager at the Gatineau, Ont., mill of Canadian International Paper Co. and *AMOS SIMPSON* is the acting manager.

J. D. DAILEY, former pulp mill superintendent at the new Red Rock, Ont., kraft mill of Brompton Pulp and Paper Co., joined the LongLac Pulp and Paper Co.'s staff just before the startup of that latest new kraft mill in Canada at Terrace Bay, Ont.

EDGAR DONALDSON, steam plant superintendent at St. Lawrence Paper Mills, Three Rivers, Que., since it was built in 1922, has retired and has been succeeded by *ROBERT A. LANE,* from Lake St. John, according to *SID WILLIAMS,* general manager.

KENNETH W. MURPHY, sales director of Barber-Ellis of Canada, has been elected president of the Canadian Paper Trade Association, with *HARRY MILLER* of Columbia Paper Co., Vancouver, B. C., as vice-president.

ROY GARNETT, who represents Swenson Evaporator (Div. of Whiting Corp., Harvey, Ill.) and Electric Steel Foundry Co. (Portland, Ore.) in eastern Canada, with headquarters at Toronto, became a father September 20. Mrs Garnett presented Roy with a son, James Arthur.

WILLIAM VAN HOUT, safety supervisor at the Kimberly, Wis., mill of Kimberly-Clark Corp., is temporarily on leave while instituting a safety program at the new LongLac kraft mill in Ontario.

PRAN NAIR of Bombay, managing director of National Newsprint & Paper Mills, Ltd., in India, recently visited Montreal to discuss plans for the newsprint mill his company is building. It will have a capacity of 100 tons a day, using Indian hardwood.

Macdonell Leaves For Post in Brazil

Colin C. Macdonell, former assistant sulfite superintendent at Bowater's Newfoundland mill, has gone to Monte Alegre, in the state of Parana, Brazil, to be sulfite superintendent of the Industrias Klabin mill there.

Mr. Macdonell has really moved around — he was born in Montreal and raised in Vancouver, B. C.

GEORGE O'BRIEN, for several years a vice-president of Powell River Co., in charge of timber operations, has been elected to the board of directors, succeeding G. F. Laing, who retired owing to ill health. O'Brien entered the logging industry as a bull cook, held a wide variety of jobs in the woods, took a forestry course at the University of Washington and graduated with a degree in logging engineering. Following his father's death he amalgamated his own logging company with his father's, and the O'Brien Logging Co., later to become a Powell River subsidiary, came into being.

JACK DICK, service engineer, Dominion Engineering, really got around lately, servicing both the two big new machines starting up at Powell River, B. C., and at Corner Brook, Newfoundland, and stopping off between assignments to give his daughter, Hope, away in marriage.

COL. H. WYATT JOHNSTON, manager of Sutherland Refiner Corp.'s Canadian headquarters in Montreal, is back from a tour of several European countries. He helped start up a Sutherland installation in France.

CYRIL HAGUE, executive of the personnel department, Pacific Mills, Ltd., Vancouver, B. C., has been elected chairman of the safety committee of British Columbia's pulp and paper industry. He succeeds E. W. Campbell, personnel manager of the same company.

CURRY M. CARMICHAEL, JR., whose father is general manager and vice president of Shawinigan Chemical Co., Stainless Steel and Alloys Div., Montreal, has moved with his wife and two children to Toronto where he will head a branch of Firth, Brown Steels, Ltd. This company represents Tri-Clover in Canada.

KEN LOGAN, who has completed his Ph. D. course at the Pulp & Paper Institute in Montreal is on a tour of Europe and becomes research director of Anglo-Canadian Paper Mills in Quebec on his return. He was formerly at Pacific Mills, Ocean Falls, B. C.

D. A. PIRTTINEN, formerly with Stadler, Hurter & Co., pulp mill consulting engineers, has been appointed mechanical engineer with Robert A. Rankin & Co., consulting engineers, Montreal.

J. B. WEST, mill manager, Canadian International, Three Rivers, Que., took in the World Series.

Dick Sandwell Forms New Consulting Firm

P. R. "Dick" Sandwell is resigning from his post as chief engineer of Powell River Co., Vancouver, B. C., at the end of the year to enter partnership with H. W. Beecher of Seattle as consulting engineers.

Mr. Sandwell will continue to have his home and office in Vancouver and will direct the Canadian operations of the firm, which Mr. Beecher will represent in the United States.

It is understood that no successor to Mr. Sandwell will be named by Powell River Co. as the new firm will be under contract to carry out, on a consulting basis, the duties for which Mr. Sandwell was previously responsible as an official of the company. The new arrangement, however, will leave him free to take on assignments from other companies.

"Dick" Sandwell has had a brilliant career in the industry. A son of the late Percy Sandwell, associated with the construction of several West Coast pulp and paper mills, he was for several years with Dominion Engineering Co. He assisted in the building of one of Australia's newsprint mills and succeeded his father as resident engineer, then returned to Dominion Engineering Co. in Montreal. Soon afterwards he joined Ontario Paper Co. at Thorold, Ont., as development engineer, and about three years ago he was engaged by Powell River Co. as chief engineer.

Pulp and Paper Institute In Montreal Has 17 Students

The Pulp and Paper Institute, McGill University, right in the heart of Montreal, has 17 post-graduate students this year including one from the U. S., one from New Zealand and one from Norway. The others are Canadians.

The small Pusey and Jones pilot size paper machine has been provided with rubber covering for rolls. Its fittings, trim and Fourdrinier parts are brass. This machine runs 20 to 200 ft. per minute. A complete new pulping laboratory is being installed at the Institute, to round out its experimental equipment. New digesters, including a rotary, and screening equipment, are provided extensively with stainless steel.

Dr. C. B. Purves is director of the Institute. Old students reading this item will be interested in knowing Mrs. Traversy, secretary to Dr. Purves, is still keeping an eye on things.

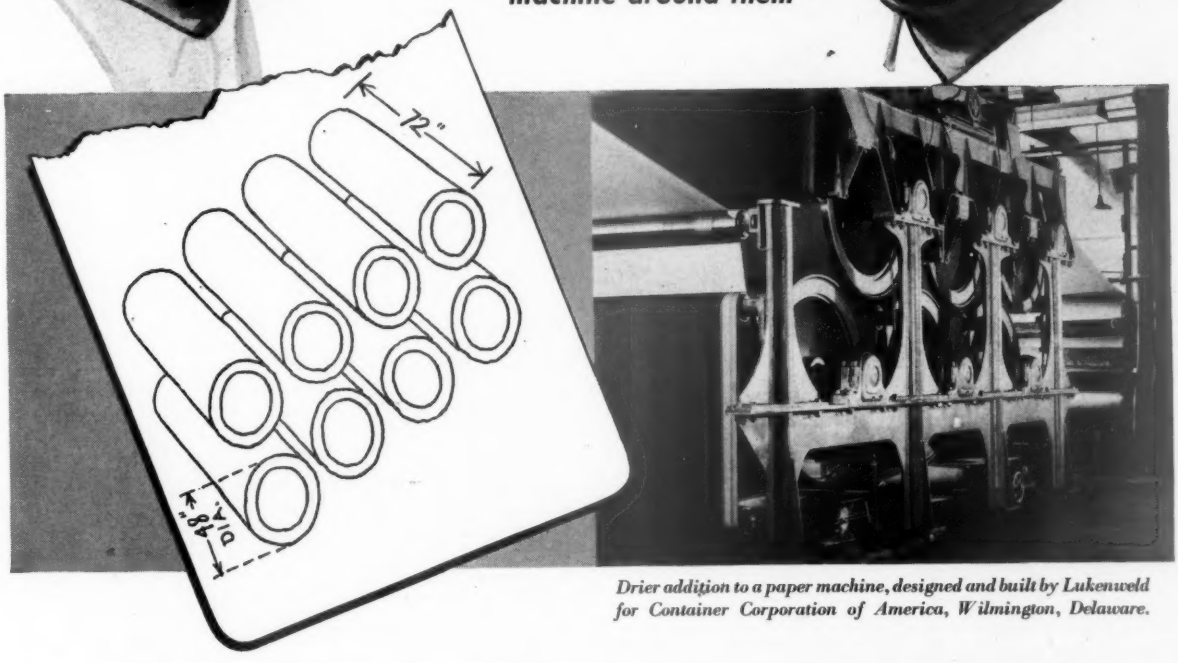
Hotel Extension at Marathon in Canada

The hotel at Marathon, Canada, built by Marathon Corp., and one of the finest mill town hotels, is being enlarged to over 90 rooms. It has had only about 30. Considerable building is still going on at Marathon, with more homes being built for employes at the new kraft pulp mill there.

LongLac Pulp and Paper Co., 50 miles west, is just opening its cedar, two-level Terrace Hotel, with one of the finest views on Lake Superior.

"EIGHT cast-iron, single-shell drier rolls are needed..."

"SIX jacketed drier rolls will do it, and Lukenweld will build the machine around them"



Drier addition to a paper machine, designed and built by Lukenweld for Container Corporation of America, Wilmington, Delaware.

● To increase the output from one of Container Corporation's paper machines, it was estimated that eight cast-iron, single-shell rolls would be needed to provide the additional drying capacity. Space was limited, so that was a factor.

Lukenweld determined that *six* Lukenweld Jacketed Drier Rolls would accomplish the same results as the eight cast-iron rolls. This would require less space, simplify the supporting structure and reduce costs. Lukenweld designed and built the machine to house and drive the rolls accordingly.

That machine is shown in this photograph at work in their plant—a compact unit packing a lot of production into small space. It is of welded plate construction, providing high strength and increased rigidity with minimum weight.

We at Lukenweld like to take ideas developed by your engineers and operating men and make them materialize. As designers and manufacturers of complete drying machinery, we are well acquainted with drying work in many industries.

May we talk with you about your drying or production design requirements? Write Lukenweld, Division of Lukens Steel Co., 444 Lukens Bldg., Coatesville, Pa.

LUKENS
LUKENWELD DIVISION

DESIGNERS, ENGINEERS AND MANUFACTURERS OF MACHINERY

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •

Personals

PACIFIC COAST

CHARLES ACKLEY, Paper Mill Superintendent at the Port Angeles, Wash., mill of Crown-Zellerbach Corp. for the past two years, has been transferred to Paper Mill Superintendent at the West Linn mill of the corporation, in Oregon.

Mr. Ackley will succeed Jess A. Harris, who has requested release from the full time position in advance of his retirement in 1950. Mr. Ackley is the fourth Vice-President of the Superintendent's Association.

Claude Kelley, former Paper Mill Superintendent at the Ocean Falls mills of Pacific Mills, will temporarily fill the vacancy at Port Angeles. Mr. Kelley's permanent position is Paper Mill Consultant at the Camas, Wash., mill of C-Z.

R. M. HOFFMAN, present president of Link-Belt Co., Pacific Division, San Francisco, has been elected vice president of the parent Link-Belt Co., in Chicago. Mr. Hoffman joined Meese & Gottfried—predecessor of the Pacific Coast company—in 1913. He has been president of the Pacific Division of Link-Belt since 1943.

HAROLD STODDARD, traffic manager of Soundview Pulp Co., Everett, is vice president of the Pacific Northwest Advisory Board, which has offices in Seattle and issues forecasts of car loadings. Executive secretary of the board is *A. M. CLONINGER,* manager of traffic and warehousing for the Longview Fiber Co., Longview.

CLAUDE STITT, resident manager of the new pulp and board mill being built by Fibreboard Products Inc., at East Antioch, Calif., has been mayor of Antioch for six years and member of the city council for 12.

AXEL BRANDSTROM, of Seattle, former Crown Z chief forester, is consulting forester for Celanese Corp. of America, building a new pulp mill near Prince Rupert, B. C.

George Lamb Marries

George Emerson Lamb, of the Lamb-Grays Harbor Co., Hoquiam, Wash., was married Oct. 2 in Erskine Presbyterian Church in Ottawa to Miss Winifred Isobel Smith, the secretary to G. D. Davidson, plant engineer of Canadian International Paper Co., Gatineau, Que. The couple honeymooned at Sun Valley on way to their home in Hoquiam.

ED GARRISON, of Seattle, representative of American Cyanamid Co., drove his daughter to Pullman, in eastern Washington, to launch her on her collegiate career at Washington State College.

G. V. PALMROSE who, up until the latter part of 1941, was with the Pulp Division research department of Weyerhaeuser Timber Co., Longview, Wash., but since then was with Dow Chemical Co., among other firms, is now back with Weyerhaeuser as a chemical engineer in the technical department of the Pulp Division at Longview.

L. E. UTTER, formerly a Pacific Paperboard Co. official at Longview, Wash., recently was elected president of the newly formed Hayward Publishing Co., Hayward, Calif., which will publish two newspapers in that area.

PETE ONKELS, general superintendent, Pacific Coast Paper Mills of Bellingham, had the pleasure of seeing his dog "Bonny" take second place in the Ladner, British Columbia, field trials. Pete's prize pup was the only northwest dog in the ribbon class at the western Canadian classic.

HAROLD WALL, chief chemist at Longview Fibre Co., is now in his seventh year as a city councilman in Longview, Wash., after being re-elected once to the post.

LAWSON P. TURCOTTE, executive vice president, Puget Sound Pulp and Timber Co., is 1948 Community Chest chairman for Bellingham. Serving under Mr Turcotte in the Charity drive for the northern Washington city is Francis "Bill" Herb, president and general manager of Pacific Coast Paper Mills, who is head of the Industrial Division of the Bellingham Chest drive.

TONY GUSTINE, Sulfite Supt., Rayonier Incorporated, Hoquiam, Wash., counts 28 fish here—all his own catch in Willapa Harbor on the Washington Coast.

DON REED, alcohol plant superintendent of the Puget Sound Pulp and Timber Co., has acquired a trim little 20-ft. runabout boat for pursuing salmon among the channels of the San Juan Islands.

LOUIS W. BAILEY has resigned as chief electrician for the Pulp Division, Weyerhaeuser Timber Co., Longview, Wash., to start an electrical contracting business of his own at Kennewick, Wash. He was succeeded by *CARL FAHEY* who formerly was with the BFD Division of Diamond Match Co., and, prior to that, Aluminum Corporation of America.

MORTON HOUSTON, Northwest representative of Rayonier Incorporated, has been elected a trustee of the big county-operated public hospital in Seattle.

LEE ANGELL, machine tender for Puget Sound Pulp & Timber Co., should feel proud these days. His son, Lee, Jr., is now golf champ of Western Washington College.

SPECIAL MEMORIAL SERVICES were held recently for employes of Hawley Pulp & Paper Co. (now Publishers Paper Co.), Oregon City, Ore., who lost their lives in the armed services during World War II. Carl E. Braun, Vice President and Mill Manager, and himself a veteran of World War No. 1, is shown delivering tribute. A bronze plaque mounted on native stone was erected on mill property.

NEW

HIGH SPEEDS WITH UNVARYING ACCURACY

in single or multiple sheeting

NEW Clark-Aiken Cutters incorporate many forward-looking design features for speed and accuracy in setting, faster cutting with unvarying accuracy over long runs, and uninterrupted operation with minimum maintenance. No other cutter offers all these cost-cutting, production-improving features:

Infinitely-Variable Sheet Length Range within the range of the knife cylinder—18" to 60" with 18" cylinder; 25" to 86" with 25" cylinder.

Length Accurately Set and Constantly Maintained — The Clark-Aiken length adjustment system has been proved, through years of service, the most efficient for obtaining and maintaining accurate sheet length under all conditions.

Length Adjustments Quickly and Easily Made—Change gear for rough length adjustment can be removed by unscrewing one nut. Final adjustment can be made while cutter is in operation.

Clean, Sharp Cutting on Any Paper — The patented Clark-Aiken spiral knife operates with a scissors action insuring clean, sharp cutting of thinnest or thickest paper. Micrometer adjustment accommodates paper of any thickness.

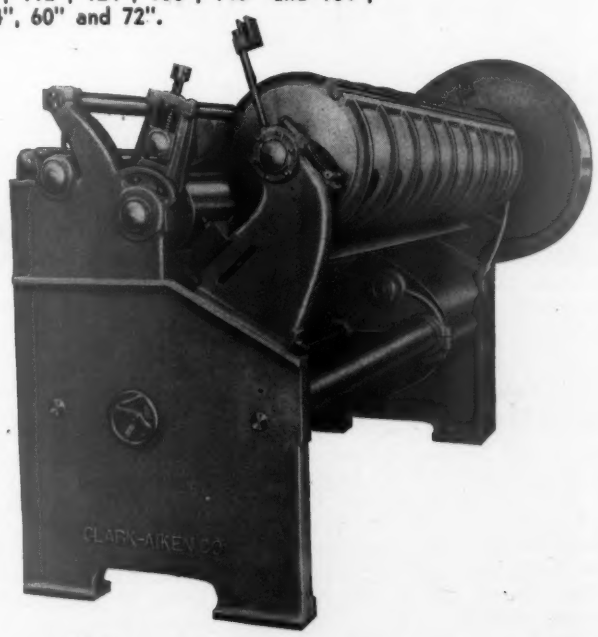
All Shafts Turn in Ball Bearings — permitting high speeds and insuring accurate alignment, maximum power efficiency and reduced wear and maintenance.

Many Other Features—Simple, precision squaring adjustment, ball-bearing slitters cut without dust, non-slip draw drum and pinch roll, self-sharpening fly knife, precision-cut gears and fibre pinions, efficient gun lubrication.

NEW Clark-Aiken Cutters and Layboys are made in eight standard sizes with maximum width capacities of 76", 88", 100", 112", 124", 136", 148" and 164", simplex and duplex. Smaller models: 48", 54", 60" and 72".

Write for bulletin.

NEW *Clark-Aiken* CUTTER



Air Dryers • Bearings • Calendars Belt Drives • Chain Drives • Cooling Rolls • Couplings • Cutters Drive Units • Electric Drives • Engineering Guides • Drying Systems • Knives • Layboys • Laminators • Machine Design • Machine Repairs • Presses • Packing Boxes • Pumps • New and Recovered Rolls • Remodeling, Rolls of All Types • Shafts • Slitters Size Presses • Steam Dryers and Stacks • Wet Winders • Winders.

THE *Clark-Aiken* COMPANY

PIONEERING IN PAPER MILL MACHINERY IMPROVEMENT SINCE 1828

Paper Mill Division

LEE, MASSACHUSETTS

Personals

MIDDLE WEST

GEORGE A. WHITING was elected executive vice president of the Whiting-Plover Paper Company, Stevens Point, Wis., and A. J. Schierl was elected secretary-treasurer and general manager at a recent directors' meeting. Other officers are F. B. Whiting, president, and Thomas Leech, vice president and sales manager. Directors are the officers and Thomas A. Moore.

O. W. CALLIGHAN, of Kalamazoo, Mich., completed 20 years' service with Edgar Brothers Co. this fall and celebrated by taking his wife, May, on a trip to the Pacific Coast. Mr. Callighan started his career as a screen boy and later was a backtender, served in World War I as top sergeant, and was chief chemist and assistant to the superintendent of Allied Paper Mills, Kalamazoo.

ROY J. SUND, vice president in charge of manufacturing of Marathon Corp. mills, with headquarters at Menasha, Wis., is an active Rotarian and only recently was appointed to the "Uth-Rotar" committee of the Menasha club and also on a committee to handle a month schedule of programs.

GLENN STEWART, executive of Kalamazoo Vegetable Parchment Co., is member of the centennial celebration steering committee for Kalamazoo's First Presbyterian church and is editor of the Kalamazoo Presbyterian.

GLEN E. GRAHAM, vice president of Sutherland Paper Co., Kalamazoo, Mich., is also vice president of the Kalamazoo Safety Council and in that capacity made the prize awards for a safety contest among truck drivers throughout that county.

MAURICE F. GILMAN, controller of Alton Box Board Co., Alton, Ill., has been elected to membership in the Controllers Institute of America.

No. 1 True Fish Story In Kimberly-Clark

Charles Wilson Nelson, assistant vice president and director of the expansion program for Kimberly - Clark Corp., Neenah, Wis., recently took his 86-year-old father to the company's new LongLac mill on the north shore of Lake Superior, where "Dad" Nelson got in some fishing while his son worked.

One day Dad Nelson was trolling when suddenly he thought he caught his line in floating brush. But it turned out to be a 400-500 lb. caribou and the fish lure was caught in his antlers. The caribou calmly swam to shore and carefully shook the lure and line loose before bounding off up a steep bank.

ASTLE HONORED BY SUPTS

IN RECOGNITION OF SERVICE well rendered, WILLIAM H. ASTLE of Michigan Paper Co., receives certificate as past Chairman of Michigan Division of Superintendents' Ass'n. (left to right) HERBERT B. JOHNSON, present Chairman of the Michigan Division; GLEN SUTTON, 4th Vice President of the national association, and Mr. ASTLE.

L. E. RANDECKER (far right) came down to the meeting from Hammermill Paper Co., Erie, Pa., to discuss beater installations, a subject in which he has interested himself for many years.

Prior to the features of the evening program, the highlight of the first fall meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association, Sept. 16, 1948, at Kalamazoo, was a presentation to William H. Astle of Michigan Paper Co., Plainwell, Mich.

Astle, past-chairman of the division, was honored with the Recognition Award Certificate. This was signed by Herbert B. Johnston, 1948-49 chairman of the division, and was given by Glen Sutton of Sutherland Paper Co., fourth vice-president of the national association.

Presiding over the meeting was Herbert B. Johnston, of Allied Paper Mills, the new chairman.

Guest speaker was L. E. Randecker, Hammermill Paper Co., Erie, Pa. Randecker used slides and charts to bring before the superintendents some of the conclusions, as well as potential possibilities, of a new beater that has been installed at Hammermill. He was assisted by Frank Hayes, sales manager, of the Noble & Wood Machine Co., Hoosick Falls, N. Y.

Following Randecker's presentation, questions for answering, wewre directed from the audience. There were 80 in attendance.

The October 21 meeting at Kalamazoo featured J. H. Heuer, St. Regis Paper Co., Deferiet, N. Y., on the subject "De-Inking and Bleaching of Waste Papers."

NATHAN H. BERGSTROM, vice president of Bergstrom Paper Co., Neenah, Wis., recently gave his lovely daughter, Natalie Jane, in marriage to Capt. Ray Joseph Willets of the U. S. Air Force, whose home is in Los Angeles. Capt. Willets has been stationed at Randolph Field, Texas.

MISS AUDREY MADSEN, daughter of Henry P. Madsen, president of Appleton Machine Co., Appleton, Wis., was wed recently to Maurice L. Horner, Jr., of Chicago, who is with Inland Steel Co., and they went to Havana for the wedding trip.

SECRETARY TO GLENN SUTTON, superintendent of the Standard Board Division of Sutherland Papper Co., Kalamazoo, Mich., is Mrs. Elaine Rasmusson and her mother, Mrs Lucille Chapman, is secretary to Cliff Wilson, advertising manager of the same company.

THERE'S A DICK TRACY, supervisor of the finishing room and a *JESSE JAMES,* in the accounting department at Nekoosa-Edwards Paper Co., Port Edwards, Wis.

Kieffer Paper Co. Fire Destroys Main Plant

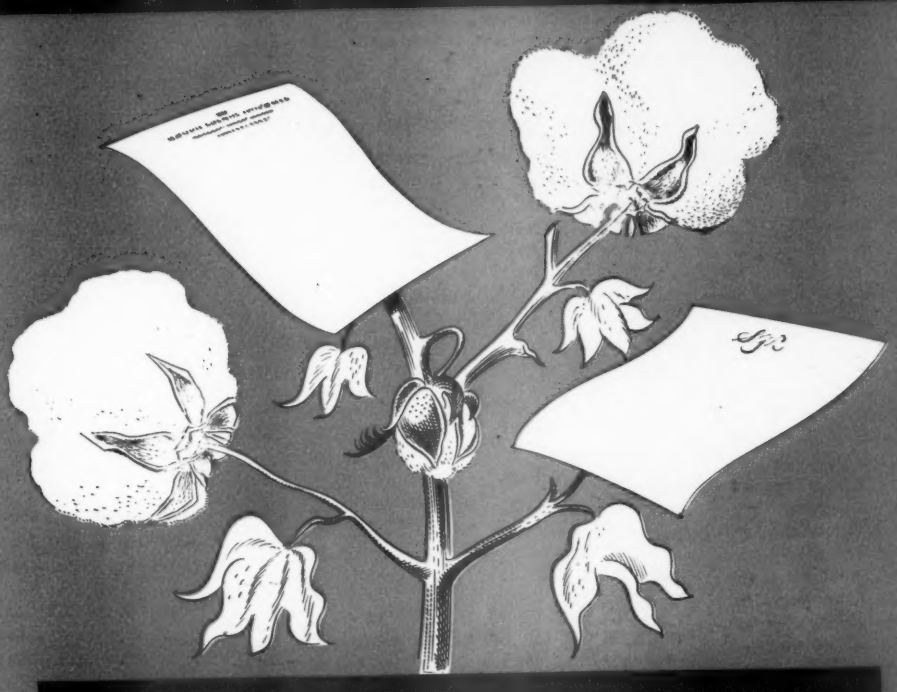
A new brick and concrete addition, housing the company offices, escaped, but the main plant of Kieffer Paper Co., Brownstown, Ind., was razed by fire in late September. Estimate of damages is $1,200,000, according to company officials. The company made indented paper used to pack manufactured goods, wrapping, crepe and cushioning type paper. Its capacity was 30 tons a day and the firm did a $1,500,000 business last year.

Three large paper-making machines, one installed in 1890 when the mill was founded, another in 1912, and a third in 1920, were destroyed, as well as the supply of scrap paper and 100 tons of finished paper.

Inside Germany

If you get a letter from Germany, look at the inner side of the envelope. It is more than likely that you will find a portion of a U. S. Army map. Due to paper shortages, many envelopes are being converted from old map papers with the reverse side out.

in high quality paper the **trend** is to



cotton linters

Good usable cotton rags for papermaking are getting scarcer, more costly every day. But papermakers do not have to accept less satisfactory substitutes. Hercules Bleached Cotton Linters are rapidly gaining acceptance as high quality extenders for rags. Their performance in rag-content writing papers, for example, is well known. Their clean virgin fibers contribute good color, permanence, feel, bulk, opacity, and sheet structure to the paper. Write for helpful technical information on adapting Hercules Bleached Cotton Linters to your paper processing.

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Personals

NORTHEAST

HOWARD WHITTEMORE, 83, chairman of the board of Parsons & Whittemore, Inc., New York, died Sept. 17 at his home in Rye after a long illness. He had resigned from the presidency last year due to ill health. It was in 1922 that he took that office at the retirement of Mr. William H. Parsons, his cousin. Mr. Whittemore was widely known in the pulp and paper trade both in the U. S. and abroad and began his career in it more than 50 years ago when he joined with Mr. Parsons and later founded the present firm of Parsons & Whittemore.

NORMAN DOUGLAS WILSON, only son of Norman W. Wilson, president of Hammermill Paper Co., Erie, Pa., was struck and killed by a fast freight at a railroad crossing about 10 miles west of Erie on September 30.

Young Wilson was employed in the purchasing department of Hammermill. He served in the Navy during the war and previously attended Princeton University. He is survived by his parents, his wife and two children.

J. O. JULSON, B-F-D Division of Diamond Match, Plattsburgh, New York, has been elected chairman of the New York-Canadian division of the American Pulp and Paper Mill Superintendents Association. The election took place at the Lake Placid meeting in late September. Other officers: *DONALD R. DICK,* Howard Smith Paper Co., second vice-chairman; *HARRY S. CUTLER,* United Board and Carton Corp., third vice-chairman; *CHAUNCEY E. COLE,* Mutual Boxboard, secretary-treasurer.

FRANK W. SMITH, vice president of Bulkley, Dunton Paper Co., S. A., and *ALBERT ANDREWS,* who will have charge of the company's operations in South Africa, were recently in Johannesburg completing arrangements for setting up Bulkley, Dunton's new sales offices in strategically located cities of the Union, announced by George G. Cobean, president of Bulkley, Dunton Paper Company, S. A. Mr. Andrews joined Bulkley, Dunton about a year and a half ago, and has been groomed for heading up export activities in South Africa. He is a British subject, and ex-major in the British Army.

R. S. JOHNSTON, Vice President of Pusey & Jones Corp., Wilmington, Del., made his more or less annual trip through the West recently, returning home early in October.

JOHN E. HYDE has retired from the position of vice president and mill manager of S. D. Warren Co., Cumberland Mills, Me.

H. F. R. "BOB" WEBER has just been appointed representative of Link-Belt Co. (Chicago, Ill.) to the pulp and paper industry. He will have full support of the company's plant and far-flung sales and engineering departments. Mr. Weber has had a distinguished career with Link-Belt since he started with them in 1915 as power transmission engigineer at their Philadelphia plant. After taking time out for the Army durnig the First World War he became district manager of positive drive sales at Chicago in 1926. He has since been central division manager for power transmission, and divisional manager for silent chain drives in Indianapolis. He has specialized in paper mill work.

Bennett Announces Firm

Murray H. Bennett has announced formation of his new company, "Chemical Linings, Inc.," with offices at 407 Electric Building, Watertown, New York.

This company will engage in installation of digester and accumulator linings, all types of tile constructed chests, tile linings and special acid proof work.

Mr. Bennett was formerly with Stebbins Engineering & Manufacturing Co.

EARL E. JAMES, controller, Westfield River Paper Co., Inc., Russell, Mass., has been elected to membership in the Controllers Institute of America. The top financial executives of 3,206 leading American companies in every branch of industry are members of the Institute. It was founded in 1931.

JUAN P. BOSCH, Bulkley, Dunton Paper Co., S. A., left on August 20th for an extensive tour of the Latin American countries in Central and Northern South America and the West Indies, it was announced by George G. Cobean, President of Bulkley, Dunton Paper Co., S. A. The journey was entirely by air and consumed about ninety days.

ROBERT EVANS, assistant to the president, Riegel Paper Corp., New York City, recently had an article on Guatemala in the travel section of the "Herald-Tribune." Mr. Evans has traveled extensively in Guatemala and is by way of being an enthusiastic expert on the country.

D. MANSON SUTHERLAND, president of Sutherland Refiner Corp., Trenton, N. J., is going to visit Southeast U. S. mills this winter from offshore—traveling along the coast in his power cruiser.

HAROLD R. MURDOCK, consulting chemical engineer, for the Japanese pulp and paper industry, writes from Tokyo that he is still on General MacArthur's staff, though he plans soon to open his own office in Tokyo. Meanwhile his address remains: Natural Resources Section, G.H.Q., SCAP, A.P.O. 500, San Francisco, Calif. Mr. Murdock has received letters with less sufficient addresses though — including one simply addressed, "MacArthur's Chief of Paper, Tokyo, Japan."

Three Named to New Positions in G. E.

John W. Butler has been named manager of the commercial engineering divisions, General Electric's transformer and allied productions division, according to Harry F. McRell, manager of sales. Other appointments are C. E. Sutton, Jr., to assistant manager, power transformer sales division; and C. W. Lamplough, manager, order service division.

Mr. Butler has been associated with G.E. since 1926, and has had extensive experience in several fields. For the past year he has been a travelling specialist and technical consultant for G.E.

Mr. Sutton joined G.E. in 1935, after graduation from Emory University. After service in company engineering and sales divisions, he travelled widely as district transformer specialist, through southern and middle Atlantic states.

A native of Ottawa, Mr. Lamplough studied civil engineering at McGill University and joined G.E. at Schenectady. During the war he supervised expedition of G.E. equipment to all large cargo vessels and oil tankers.

Marcalus Installs New Machinery

Two new additional high speed Dilts refiners have been installed at the Lincoln, N. H., mill of Marcalus Manufacturing Co. The latest type Witham-Bristol freeness and consistency recorder have also gone into the beater toom. The hydrapulper at this newly modernized Eastern mill (modernization reported in Sept., 1948, **PULP & PAPER**) is an 18-ft. Dilts machine.

The paper machine is driven by a new 350-hp Westinghouse turbine with a ratio of 10 to 1 up to 800 ft. per minute.

Manager at the Lincoln mill is J. G. Crump.

United Board Moves

United Board and Carton Corp. has moved from New York City to Syracuse, N. Y., it has been announced by P. M. Loddengaard, executive vice-president. The move makes Syracuse national headquarters for a leading manufacturer of paperboard and folding cartons.

For some years, United has held a controlling interest in Lowman Folding Box Co., a Syracuse concern. It became an operating division of United in 1947. The headquarters operations have been transferred to the Lowman plant.

United has plants at Victory Mills, Cohoes, Brooklyn, Syracuse, and at Springfield, Ohio. It also operates paper mills at Lockport and Thomson, New York state, and at Urbana, Ohio. Its sales organization is nationwide.

RATIO OF U. S. PAPER PRODUCTION to mill capacity for the week ending Oct. 2, 1948, as reported by the American Paper and Pulp Association, was 99.6% compared with 98.4% for the preceding week, and 109.5% for the corresponding week a year ago. The volume of production included in the survey was 179,083 tons as compared with 173,539 tons for the corresponding week a year ago.

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SIGNIFICANT PAPERS

GIVEN FOR BELLINGHAM TAPPI

SPEAKERS AT BELLINGHAM TAPPI were (left to right): V. C. HANER, Plant Engineer, Puget Sound Pulp and Timber Co., Bellingham, Wash.; H. M. PERRY, General Electric Co.; Portland, Ore.; LEE F. CHANEY, The Flox Co., Portland; W. O. STEVENS, Consulting Engineer, Seattle; D. W. HARRIS, C. C. Moore and Co., Seattle; and C. H. CARTER, Chief Power Plant Engineer, Puget Sound Pulp and Timber, whose article appears elsewhere in this issue.

Steam plant engineers and sales technicians were in the spotlight at the recent meting of the Pacific Coast Section of TAPPI held in the Leopold Hotel in Bellingham, Wash., in late September. Over one hundred leaders in the pulp industry were on hand to hear a panel discussion of "Power Plant Engineering and Practices" presided over by Victor Haner, plant engineer of Puget Sound Pulp and Timber Co. Five papers were presented, followed by a lively discussion. A social hour preceded the evening dinner at which an address on "Hardwood Forests of West Virginia" was given by Professor Lowell Besley of the University of Britsh Columbia.

Speaking on, "Problems and Pitfalls Encountered in Planning Power Plant Installations," W. O. Stevens, consulting engineer from Seattle, gave a full review of the many engineering problems in planning a steam and power plant. Mr. Stevens stated there is a basic difference of opinion when plans for a plant are considered, depending on whether the view point is that of the management, engineer or operator. As a rule, management is careful not to spend one cent more than is necessary to continuously produce steam and power in such quantities as will satisfy the demand. The engineer designs the plant to fit cost estimates as well as the needs of management and operator. An operator tries to have built into the plant all the safeguards and conveniences which will assist him in establishing a high and uninterrupted production record.

Simplicity Important

Mr. Stevens also said that it is difficult for management to evaluate engineering services, and he presented the thought that a complicated and involved solution to any engineering problem in design was an indication of an incomplete approach to the problem. Simplicity of design is the first and most important factor in planning a power plant and an engineering firm should be judged by this standard, according to Mr. Stevens.

It was also brought out that a design engineer should have an over-all training in power plant design, rather than be specialized in one particular phase of work, as the specialist will have to depend on recommendations of salesmen for various processes and equipment, and the entire plant, although containing good equipment, might be improperly designed.

Mr. Stevens also stressed a point, brought out by the other speakers who followed him, that each plant should be designed to suit particular conditions found in the mill, and he felt that West Coast conditions were different from other parts of the country. Since most equipment is designed in the East, plants are sometimes set up that do not fit themselves into the Pacific Coast requirements.

Carrying on from where Mr. Stevens left off D. W. Harris, C. C. Moore & Co., Seattle,, described different types of boilers suitable for West Coast conditions. He told his listeners that with the great increase in board mills and other wood conserving plants entering the scramble for wood and wood-waste, it was necessary to think of other sources of fuel for process and power steam. In his paper, "Combined Firing of Coal and Wood Refuse", he described different types of boilers which combined a variety of fuels. He signified that it was most satisfactory to use two fuel feeds for the different kinds of fuel, rather than mixing the fuels before spreading them out over the grates.

With the increase of hydraulic barking, moistures in waste have gone up to 60-70%, whereas they were formerly in the 50-57% range. High moisture fuels have been found to work more satisfactory on boilers having a continuous ash discharge grate, the rate of rotation of the grate at around 10 ft. per hour giving a proper ash depth as well as allowing time for drying and some volatization of the fuel. Slides showing different types of boilers and solutions to boiler design problems punctuated Mr. Harris' talk, leaving the group with a very clear picture of the latest in boiler design.

Higher Steam Pressure

A paper, "Boiler Feed Water Treatment" was then presented by Lee F. Chaney, The Flox Co., Portland, Ore. With the increased use of extraction turbines, higher steam pressures are becoming more common. High pressures also present new and more difficult problems to the water treatment specialist. Mr Chaney showed figures that indicated much could be saved in power plant operation by properly treating feed water.

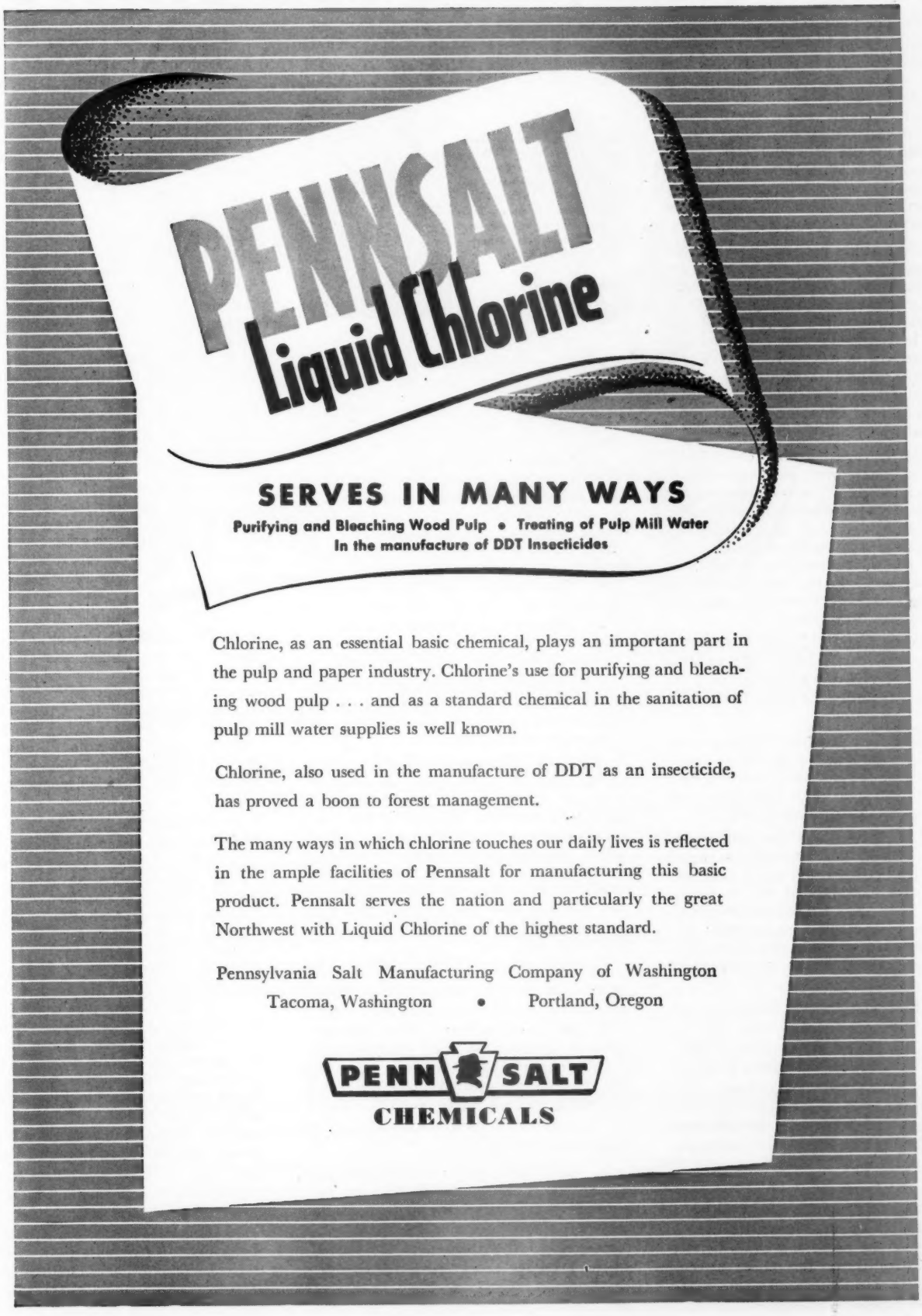
"Chemical Cleaning of Boilers" was the title of a paper presented by Charles H. Carter, chief power plant engineer for Puget Sound Pulp and Timber Co. of Bellingham.

Flexibility of Turbines

Extraction turbines came in for considerable discussion by the group following a paper by H. M. Perry, General Electric Co., Portland, Ore. "Extraction Turbines for Industrial Power", showed the extreme flexibility of condensing extraction turbines in power plant operation, and at present one-half of all industrial installations make use of them. Since 1930, average pressures of boiler installations show a rise from 250 p.s.i. to 525 p.s.i. in 1947, and the trend is still higher. Where process steam is used, as in the paper and pulp industry, condensing extraction turbines make power generation a live factor in design, even though outside sources of power are available.

In his description of the hardwood forests of West Virginia, Prof. Besley, University of British Columbia, showed that although forests have been cut in that region for over two-hundred years, the forest wealth is still a major factor in the economy of the state. Tulip poplar, he said, is the most common species, follower by the white oak and black walnut. Due to the rugged terrain, logging similar to logging on the West Coast is carried out, with truck logging gradually supplanting the use of railroads. He stated that pulp wood cutting in West Virginia is a part-time occupation, with general participation of the farming population.

Arrangements for the meeting were in the hands of E. O. Ericsson, technical director, Puget Sound Pulp and Timber Co., assisted by Malcolm Stewart, chemist, and Ducie Chads, chemical engineer for the same company.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HARDBOARD, *and its* MANUFACTURE

By A. Halvar Lundberg

Consulting Chemical Engineer, Textile Tower, Seattle, Wash., who participated prominently in development of sulfite pulp industry on Pacific Coast. Among companies he represents is American Defibrator Co.

Mr. William H. Mason in his patent application filed Sept. 18, 1925, and later granted, March 20, 1928, made known for the first time the possibility of "producing from natural wood, usually waste pieces from sawmills, a product having practically all the characteristics of natural wood, but of increase density and remade so as to be without grain and free from the weaknesses which natural wood has across the grain."

According to his patented process "the fiber is preferably prepared by explosion from a gun through a constricted outlet under high pressure usually about 750 p.s.i." He does, however, not confine himself, but explains "that the wood may be ground or transferred into fiber in other ways so long as practically all the constituents are disintegrated into substantially fibrous state and the fibers are not unduly chopped or shortened."

"Chemically digested fiber from which the lignins have been substantially removed," he wrote, "is not adapted for the purpose of hardboard as practically all or at least the larger part of the natural lignins present in the wood or woody material being necessary to be retained and incorporated in the new product in order to obtain thorough cohesion throughout the fibrous body."

Mr. Mason found that fiber made by explosion was particularly well adapted for making the hard grainless product we now recognize under the name hardboard. He said:

"The fiber thus produced requires only slight refinement and is preferably formed into sheet form on a Fourdrinier wet end. Some of the excess water is eliminated by passing through squeezing rolls.

"The sheet leaving the wet end is first cut into desired lengths and the moist fiberated material is dried under heat and pressure and consolidated into a firmly coherent body in a heated platen press. To obtain best results, no material release of pressure should take place until the drying and solidification of the product is substantially cumplete."

Mr. Mason points out in his patent description that "pressures of from 200 psi to 700 psi give very satisfactory results." However, in practice, the higher pressure ranges are most commonly used. Too high pressure such as 1,500 psi or more are to be avoided because the products made under such pressures are relatively brittle.

"Drying takes place rapidly," he said, "the water being quickly reduced to a low proportion by the squeezing during the closing of the press and close contact being made with the hot press platens under the pressures used. The press platens are heated to a temperature sufficient with the pressures used to produce the hard coherent body of fibrous material. To insure best results the steam for heating the press platens is preferably at a pressure well above 100 psi.

"The moist fiber sheets, which are about ¾-inch thick as they come from the wet end, are about ⅛-inch to 3/16-inch thick when removed from the press. The product is dense, stiff, and strong and has all the qualities characteristic of natural wood in the direction of its grain in as great or greater degree than the wood, with the difference that the product is grainless and has no direction of weakness. The product can be trimmed or worked with ordinary woodworking tools. It is resistant to absorption of water and with addition of size, additional resistance to water penetration can be obtained.

"The product after pressing is so thoroughly dry as to be free from practically all moisture and has to pass directly into a humidification chamber.

"For usual hardboard the sheet is laid in the press on a screen as of copper wire mesh or the like—this is to assure rapid drying. The screen remains in the press during the operating of drying and affords added opportunity for escape of moisture in the form of steam. Use of such screens is of course not desirable where a product is desired to have smoothly finished surfaces on both its faces." This type will be discussed later.

The Mason process, being the forerunner in the hardboard field, found adaptation in America, Canada, Sweden and other countries. The explosion method, though used even today, is difficult to control. The fiber was generally not uniform and not too well separated. The yield was relatively low.

Asplund's Patent

Arne Asplund, a Swedish engineer, during his experiments to find an improved method of defibering wood discovered some seven years later that "wood chips when heated to 160-180° C. in the presence of moisture are remarkably softened and that a mechanical grinding or pulping operation performed at this high temperature produced well separated fibres and at a very low power consumption."

This discovery of high temperature defibration of raw wood chips in the presence of a small quantity of moisture was the fundamental basis of the Asplund Defibrator. Mr. Asplund filed his original patent on his machine in Sweden, March 29, 1932. An American patent was granted July 23, 1935.

Mr. Asplund's patent covers both the apparatus, and the Process. He points out in his patent "that it is possible in a single operation and in only one apparatus to obtain a pulp which after being diluted with the proper amount of water but without any further treatment can be brought onto the forming machine and made into a wet sheet ready for the final drying operation." He also specifically mentions "that though a specific apparatus for carrying out his invention is described it is to be understood that the process may be carried out in a variety of different kinds of apparatuses and furthermore the process is not to be limited to any particular apparatus. It is furthermore understood that variations may be made in structure and process and process steps may be added to these described and that other variations may be made within the spirit and scope of the invention."

It is also of interest to note that Mr. Asplund "covered" himself for other atmospheres than steam. He specifies that "while steam is the preferred fluid forming the environment in which the heating and defibration takes place it will be obvious that other gaseous environments may be used." This to all content and purposes covers the use of vaporized minutely fine mists of chemicals in the atmosphere.

Mr. Asplund found later that not only different wood reacted this way, but also practically all other lignins cellulose materials known, such as straw, bagasse, bamboo, etc. The softening effect of elevated temperature for wood is attributed to the melting of the substance binding the individual fibers together in the original wood. Under the microscope the different fibers of a cross-cut of a piece of wood looks like a network. The binding layer between the fibers is known as the middle lamella. It consists mainly of lignins. The action of the heat seems to be that this middle lamella softens being thermoplastic, and particularly at temperatures of 160-180° C., it is so softened or melted that very little power action is required to rub the different fibers apart.

Conclusions and calculations from different experiments with wood chips at different temperatures have shown that the power consumption for defibration decreases along a straight line from 100° C. and upwards, but when reaching temperatures of 160 to 170° C., there is a partial drop of the power consumed. It seems, therefore, very probable that the lignous binding substance of the middle

Interesting facts about PAPER

Paperboard hat boxes were sought-after luxuries back in the 19th Century, and the "box peddler" was a well-known figure on city streets. The boxes were handmade and many were sturdy enough to be used as traveling cases.

INTERESTING FACTS ABOUT CALCOTONE PASTES

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lamella actually has a melting point or a melting range and can in this respect be compared to the melting of wax. That also takes place within a certain temperature range.

It was also observed that most of the defibrator pulp consisted of fibers which were remarkably uncut and with the cell walls unbroken. This also supports the theory that the binding cement between the individual fibers is melted and that the mechanical action is comparatively harmless to the fibers themselves. The pulp obtained from the first experimental machine was found to be very suitable for the manufacture of compressed hard board or similar products and during the following years this pulping process was developed with mainly this particular field in mind. The first commercial defibrator according to the Asplund process was built in 1932.

Developments

There are, consequently, two practical methods developed for defiberizing wood and other ligno-cellulose materials into fibers or pulp suitable for this new building material commonly called hardboard.

In America, where Mr. Mason made his discovery and also on account of the patent situation, practically all of hardboard has been manufactured according to the Mason process. The product goes under the trade name "Masonite." All other countries have more or less gone for the Asplund defibrator method.

The use of hardboard has increased most rapidly in Sweden and, in spite of effects of the world war, Sweden today produces for home consumption about half the tonnage of hardboard of the U. S. As Sweden only has a population of 6½ million the consumption is relatively over ten times that in the states.

According to a recent issue of the Swedish *Timber and Wood Pulp Journal* "the Swedish wallboard industry was in 1944—the last full war year—primarily characterized by two things: (a) New top figures for sales in the home market, and (b) the starting of three new factories for the manufacture of hardboards."

"Deliveries in the home market were nearly 40% larger than in 1943. This consumption equals practically 54 sq. ft. per head of the population . . . a figure which in the light of past experience is astonishingly high. The increased sales during the year in the home market can be largely ascribed to the brisk building activities, and partly also to the fact that the good experiences made of this useful material tend to extend its uses to ever wider spheres."

"In this connection an approximate survey of the Swedish consumption of wood fiber boards in square feet per capita of population may be of interest. The figures have been as follows:

1938	about	28 sq. ft.
1939	"	38 sq. ft.
1940	"	26 sq. ft.
1941	"	35 sq. ft.
1942	"	45 sq. ft.
1943	"	39 sq. ft.
1944	"	54 sq. ft.

"Several new plants are planned and under construction. Svaneholms A.B at Svaneskog started construction of a 10,-000-ton board mill which will start up in Dec. 1945.

"The aggregate annual output capacity at the end of 1944 may be estimated at about 250,000 tons of which 85,000 tons were insulating and 165,000 tons hardboard."

Sweden has one mill built according to the Masonite process. The balance of the mills, 10 others, are according to the defibrator system designed and planned by A.B. Defibrator, Stockholm, Sweden. This company is today supervising erection of five new mills in England, Finland, Norway and Sweden. Their affiliated company in the U.S. is the American Defibrator Inc. (Chrysler Building), New York.

One of their later installations, the Wifstavarv Wallboard Factory, is described in the previously mentioned Swedish sawmill and pulp industry generally find it necessary on account of diminishing raw material supplies to cut down the capacity of the pulp mills and go into wallboard manufacture in order to utilize the sawmill waste and various small dimensions of timber. We are, as is well known, facing the same problem in North America.

Technical Information

We generally distinguish among three types of quality hardboards:

1. Hardboard, specific weight range 1.0-1.05
2. Tempered Hardboard, specific weight range 1.05-1.1
3. Semi-hardboard, specic weight range 0.7-0.8.

Normal thicknesses are ⅛ and 3/16" for hardboard and ¼" for semi-hardboard.

The usual size is 4' width by almost any length up to 12'. On special requests boards in length of 13-18 feet are delivered from mills provided that size press is available.

Boards produced for export and shipping over long distances especially on waterways are normally crated in bundles containing various numbers of sheets depending upon the types and thicknesses of the board. The bundles are covered with cardboard and the edges of the bundles are often protected with strips of wood. Board sent by rail or truck is often sent loose to save the cost of crating.

The capacity of a mill will depend upon the number and the size of the presses. The size of the press platens is chosen with respect to the most desirable size of board from a commercial point of view.

During later years the 4x18 ft. hydraulic hot platen press with twenty openings is favored. As the demand of fiber boards in lengths 8, 9, and 10 feet is most frequent it is found to be most economical to produce in lengths of 18 feet to avoid excess of short lengths.

On account of technical reasons it is most economical to equip the press with 20 openings thus making it possible to produce 20 boards in each charge.

When the size of the trimmed sheet is 4x18 feet the area of each sheet is 72 sq. ft. and each change corresponds to 1,440 sq. ft. With a standard weight of 760 lbs. per 1,000 sq. ft. the production per pressing will be 1,100 lbs.

In the hot platen press, hardboards with a specific weight of 1.0 to 1.05 can be produced as well as semi-hardboard with a specific weight of about 0.7.

When hardboard is produced the pressure is applied direct on the wet fiber sheet, but when semi-hardboard is produced in the press spacers are applied along the edges of the hot platens to limit the pressure and to give a uniform thickness of all the boards in the press.

When hardboard is produced a considerable amount of water is expelled from the wet fiber sheet on account of the high mechanical pressure applied to it. Therefore, less water has to be evaporated. The drying time is relatively short, ordinarily 10 to 15 minutes, depending on conditions. When semi-hardboard is produced, a drying time of 25 to 30 minutes is required.

The hardboard mill is generally divided in departments as follows:

Name of Dept.

1. Wood room
2. Chip bins
3. Defiberating and Pulp Preparation
4. Size preparation and surface coating
5. Wet board forming
6. Hot pressing
7. Heat treatment and humidification of hard board
8. Board trimming saws
9. Oil tempering and humidification
10. Board crating
11. Production control laboratory
12. Repair shop
13. Steam and power plant
14. Electric transformer and switchboard
15. Water pump station

All operate 3 shifts in 24 hours, except No. 4 and No. 11, which operate 2 shifts of 16 hrs. total, and No. 1, 10, and 12, which operate only 8 hrs. a day.

Practically all kinds of wood, coniferous as well as deciduous, may be used for hardboard.

With relatively inexpensive changes in equipment cereal straws, bagasse, bamboo, and other similar fiberous raw materials may be used.

The yield is normally about 95% for wood and 70 to 80% for straw and similar materials. The consumption of wood is about 95 to 100 cu. ft. solid measure or 280 cu. ft. of chipped wood.

When fiber board is manufactured in a hot platen press the material is treated at so high temperatures (170°-190°C.) that it becomes entirely dry. After the board has been taken out of the press it therefore absorbs the humidity of the air, but this absorption is quite uneven and may cause warping of the board. On account of this the board must bs treated in a humidifier until it has absorbed a moisture content of 6 to 8%.

For certain carpentry purposes the board is heat treated when leaving the hot press. This heat treatment, carried

(Continued on page 93)

AIDS TO DIGESTION AT PUGET

BLOW PITS AND VOMIT STACKS IN FRONT OF THE DIGESTER BUILDING, WITH WASTE SULPHITE LIQUOR TANK SERVING THE ALCOHOL PLANT ON STILTS AT LEFT. THE DIGESTERS RUN THROUGH THIS BUILDING FOR A TOTAL HEIGHT OF MORE THAN FOUR STORIES.

Tapering shapes coming down from the ceiling are the bottoms of chip bins, from which chips are emptied into the digesters, tops of which are seen extending above the floor.

Puget Pulp has six digesters, with a combined volume of 60,000 cubic feet. After digesting for a period of eight hours, the pulp goes through a series of washing, cleaning, and screening operations, to maintain Puget's standards.

AMERICA'S LARGEST PRODUCER OF UNBLEACHED SULPHITE PULP

CAPACITY: 125,000 TONS ANNUALLY

PUGET SOUND PULP & TIMBER COMPANY

BELLINGHAM • WASH.

Acid Cleaning

OF INTERNAL BOILER SURFACES

by C. H. Carter

Even though acid cleaning of deposits from metal is gaining widespread usage, there has been an understandable reluctance on the part of steam power plant operators to use this type of treatment in boilers. Consequently, we would like to pass along information that was gained both from the technical and from the practical standpoint in acid cleaning four boilers at the Bellingham Division of the Puget Sound Pulp & Timber Co.

In the steam power plant there are four Babcock & Wilcox boilers, each rated at 55,000 pounds per hour steam output with hogged fuel or 70,000 pounds per hour steam output with hogged fuel and supplemental oil or straight oil firing. The boilers generate steam at 200 psig and 500 degrees F. total temperature. Each boiler is of the 4-drum Stirling type, equipped with water walls on all four sides of the boiler combustion chamber. The boilers are equipped with air preheaters, forced and induced draft fans, automatic combustion controls, and other auxiliaries, all designed for maximum operating efficiency.

The production of the steam plant is used in the pulp mill, alcohol plant, board mill, and adjoining paper mill. Most of the steam is used in processes where the condensate is not recoverable; only that steam from the Flakt pulp dryers, board machine, and a few auxiliaries and heat exchangers is returned to the steam plant. Therefore, the boilers are operated on approximately 30 per cent condensate with the remaining 70 per cent being raw water makeup. This makeup is obtained from the pulp mill supply and passed through the pulp mill filtering plant. The original source of the water is from Lake Whatcom, and has a typical analysis, as follows:

Raw Water Analysis

Hydroxide	(OH)	0 ppm
Bicarbonate	(HCO_3)	16.0
Calcium	(CA)	6.3 ppm
Magnesium	(Mg)	3.8 ppm
Silica	(SiO_2)	1.3 ppm
Chloride	(NaCl)	3.1 ppm
Suspended	Solids	0 ppm
Dissolved	Solids	38.0 ppm
Total	Solids	38.0 ppm

In the interest of minimum capital investment when the steam plant installation was made ten years ago, the feedwater treating equipment was kept to an absolute minimum. All feedwater, both condensate and makeup, is passed through a direct contact deaerating feedwater heater and then conditioned with chemicals injected into the boiler feed pump suction to provide internal treating in the boilers themselves. This type of water conditioning was used without undue difficulty until about two years ago when changing conditions caused scale to form on the internal boiler surfaces in sufficient quantities to cause tube failures. These failures shut down the boilers with resultant loss of pulp production.

On close examination, the scale had a laminated appearance and was of various thicknesses over the entire boiler surfaces. Samples of the scale were sent to laboratories, and the following was reported:

Scale Analysis

Silica	(SiO_2)	11.6%
Alumina	(Al_2O_3)	2.6%
Iron Oxide	(Fe_2O_3)	7.3%
Titanium Oxide	(TiO_2)	0.1%
Calcium Oxide	(CaO)	18.8%
Magnesium Oxide	(MgO)	12.4%
Sulphate, as	SO_3	1.7%
Phosphate, as	P_2O_5	35.1%
Ignition loss at -	1800 deg. F.	9.3%
Undetermined		1.1%
		100%

These results indicated a high calcium and magnesium phosphate sludge type scale with a high silica content. The phosphate present was in excess of that required to combine with the calcium and the magnesium. Through various studies it is found that this condition occurs frequently when silica type scale is also present.

Through the periodic boiler inspection, varying from sixty to one hundred and eighty days, this sludge scale was observed most prominently in the cold zone tubes in the last boiler pass, in the rear steam drum, on and underneath the feed pan. Consequently, mechanical cleaning methods were resorted to, such as turbining the tubes, scraping off the drum, the feed pan and the steam baffles, requiring that the boiler be cooled before men could work satisfactorily. This, with the time required to perform the work, resulted in a minimum outage period of 30 hours for cleaning only a portion of the boiler. Scale continued to increase in thickness in the remainder of the boiler to such an extent that it became necessary on Sept. 1, 1947, to schedule an outage of one boiler each seventh day or the same boiler every 28 days for mechanical cleaning.

The extensive boiler outages were becoming prohibitively costly, not only from a labor standpoint but from the standpoint of curtailment of pulp production. The decision was reached to clean thoroughly all boilers, first to eliminate the boiler outages and secondly to provide clean internal surfaces so that a definite determination of results could be observed when following the recommended changes in feeding water conditioning.

Estimates were made as to the cost and to the effectiveness of both mechanical and acid cleaning methods of removing internal boiler scale. It was found that acid cleaning of internal scale deposits on boilers had become widely used in the eastern states, even though it had been used very little in the Pacific Northwest. Perhaps the general usage in the east was promoted by the various large, well known chemical concerns that set up on a commercial basis for this sort of work, taking the complete responsibility. However, investigation revealed that various laboratories and local chemical manufacturers had developed acids with inhibitors up to at least 96 per cent effectiveness; so that, with normal precaution, acid cleaning could be used without detrimental results by the operating and the technical force available at the pulp mill. After a decision to use acid cleaning was reached, there were a number of problems to be considered.

The most important of these was to provide complete safety and protection for the workmen and the plant operators. Rubber gloves, hooded masks, methods of ventilation, and an adequate supply of soda solution for neutralizing burns in case of an accident in the handling of acid were provided.

After studying the type of boiler, it was determined that it would be difficult to get a positive circulation by pumping alone; consequently, it was decided to proceed with a semi-circulating method in which a commercial Inhibited Muriatic Acid of 28 degrees Baume' was used.

Minimum Expenditure

It was further decided to use equipment available from other sources in the pulp mill with a minimum of expenditures for new equipment. Therefore, the main item was a 90 gpm, at 40 ft. head, 3600 rpm, stainless steel pump, which was procured from the Pulp Mill Stores. The piping connection was as shown on the attached Exhibit 1. From this you will note that connection from the 650-gallon mixing tank was made through the circulating pump directly to each of the four bottom waterwall headers. Thus the flow of acid mixture was upward through the boilers and out through existing openings on each of the upper steam drums, then back into the mixing or blending tank. The 650-gallon blending tank was obtained from the Pulp Mill Stores and was set up at a convenient location at the rear of the boiler room with a suitable wood platform built up for convenience and safety in handling the carboys of Inhibited Muriatic Acid. Testing equipment was set up at the tanks along with thermometers, pressure gauges, and sample valves in the pump discharge and on the return from the boiler feed drum. The testing equipment was set up for on-the-spot testing of acid strength going into the boiler and on the overflow return from the boiler.

As the acid was not inhibited against attack of bronze or other metals besides iron and steel, it was necessary to provide blanks which were inserted under all safety valves, feed valves, water column valves, and in some cases valves such as blowoff valves were removed and the flanges were blanked. By using synthetic rubber plugs, the connections from the rear steam drum to the superheater were plugged, as it was determined that there was no detrimental scale in the superheater.

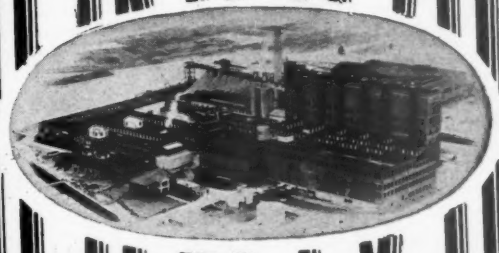
By a calculation it was determined that the boiler and waterwall surfaces held 7140 gallons of water. By estimating the amount of scale, the amount of condensate that would be required by heating the material in the blending tank to 145 degrees, and to fill the boiler to the overflow point with an acid having a dilute strength of 4 per cent, it was determined that 7900 pounds of acid would be required.

A "stop" meter was obtained for the raw water to go into the blending tanks. This meter was set so that 85 gallons of water was dumped into the blending tanks, and one carboy of 113 pounds net of Inhibited Muriatic Acid having a strength of 28 degrees Baume' was dumped into the tank. The resulting mixture was heated to a temperature of 140 degrees F. with the steam jet heater in the tank. By resetting the "stop" meter, it was possible to blend continually in the proportion of one carboy of acid to each 85 gallons of water. The carboys were dumped into the mixing tank at a rate of 30 per hour. The valves to each waterwall header were adjusted so as to get approximately equal flow into each header. The pumping rate was approximately 3,000 gallons per hour. A sample was drawn from the pump discharge after dumping each fifth carboy of acid, and a spot test was made for assurance that the acid was of proper strength and to prevent any possibility of an acid attack at the points of entry into the boiler surface due to excessively strong acid.

It required 2 hours and 10 minutes to fill the boiler to its total capacity of 7140 gallons. The first overflow return was tested at this time, and thereafter the overflow from the boiler was tested at each 30-minute interval. By this testing a determination was made of the reaction taking place inside of the boiler. The first test showed that the acid strength had dropped from the 4 per cent at the inlet to the boiler to 2.6 per cent on the return. From the attached curve, Exhibit 2, it is noted that the acid strength dropped very rapidly for the first 2 hours after the boiler was filled. Tests were continued each 30 minutes and plotted on the curve. It is to be noticed that after 6 hours and 30 minutes from the beginning of the overflow period the acid strength remained practically constant at 2.25 per cent, thus indicating that the reaction with the scale had been completed.

At the end of the acid pumping cycle, all boiler blowoff valves were opened for draining. The tanks which had been used for acid blending were filled with water and 250 pounds of

SOUNDVIEW



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caustic soda. The soda was dissolved by adding steam and by agitation during the period in which the acid was draining from the boiler. When the boiler was empty, the neutralizing caustic soda was added with more water to fill the boiler to the overflow point. Then the solution of caustic was returned back to the mixing tank; and pumping was continued even though constant tests were made, showing that no appreciable change was made in caustic strength after the boiler had once been filled. After 2 hours the pumping of caustic was stopped, and the boilers were drained. The boiler manholes were opened up, all drain valves were opened, and the boiler was thoroughly washed with water by using fire hoses. Care was taken during washing to wash as much as possible from the outside of the boiler in order to prevent the possibility of caustic burns to the operators from gas pockets or concentrations inside the boiler.

Cleaning Completed

After completion of the washing of the boiler and the tubes from inside the boiler, all blanks and blind flanges were removed from safety valves, feed valves, drain valves; and all plugs from superheaters, etc., were replaced. All asbestos gaskets exposed to acid were removed and replaced.

A thorough inspection of all boiler parts revealed the fact that the scale had been completely removed and that the metal was bright and clean, approaching the condition of the boiler when first installed. Certain tool marks and indentations of the boiler tube expanders were readily noticeable. No indication, whatsoever, could be found of etching of the boiler pressure parts. The only deposit left appeared to be pure silica. This deposit was not readily noticeable, but subsequent tests of the boiler feedwater treatment during the first two or three days of operation showed that the silica content was extremely high. It was assumed that all of the scale had been dissolved except the silica, thus leaving an imperceptible, honeycombed structure of silica which went into the boiler water circulation immediately on placing the boiler back into service.

A visual comparison of the results of acid cleaning can be determined from Photographs 3 and 4, which showed the condition of the boiler middle stream drum before cleaning and immediately after cleaning.

As soon as the boiler cleaning was completed, the boiler drums were Apexiorized to condition the boiler surface and to protect against possible oxygen, corrosion, or direct adhesion of possible scale on the boiler surface.

The first boiler unit was cleaned on Dec. 26, 1947. Due to the concrete demonstration of the practicability of acid cleaning, the remaining three boiler units were immediately scheduled for acid cleaning, so that all boilers were completely cleaned and back on the line by Feb. 12, 1948. Through the experience and the knowledge gained in cleaning the first boiler, it was possible to minimize the boiler outage when cleaning the remaining boilers. The final boiler was cleaned and back on the line within 25½ hours after being taken off the line.

It is safe to say that the acid cleaning can be done in 20 per cent of the time and with 25 per cent of the manhours required for mechanical cleaning. Furthermore, cleaning by the acid method is far more complete than is possible by mechanical scraping or rattling. The direct, out-of-pocket costs for acid and special equipment were less than 1 per cent per pound of rated steaming capacity.

In conclusion, we would like to express our belief that acid cleaning of boilers for internal scale removal is entirely feasible and practical, requiring only the normal precautions, practical knowledge, and technical assistance available in pulp mill plants.

Longview Fibre Adopts Retirement Plan

Longview Fibre Co., with pulp, paper and board mill at Longview, Wash., and box plants at Springfield, Mass., and Los Angeles, Calif., recently has adopted an employe retirement plan. This new program makes available to some 2000 full-time employes a retirement allowance which, when added to primary federal social security old-age benefits, will provide an employe retiring at age 65 with income about equal to half of his average pay.

Full-time employes have the privilege of joining the plan after five years of continuous service. Continuous service back to the time the company was organized in 1926 is retroactively included in the plan, with the company making all contributions for services rendered up to Jan. 1, 1949. Beginning not earlier than next Jan. 1, and continuing while in active service, each employe member will contribute 2% of his annual earnings up to $3000, and 4% above $3000. The company will contribute the balance needed to provide the benefits under the plan. This company contribution is estimated at about $2 for each $1 contributed by employes.

An additional benefit to members is a $1000 death benefit paid to the beneficiary of a retired member upon his death. Other benefits include disability allowances, early retirement allowances, and optional forms of retirement allowances.

IN INDUSTRY NEWS (left to right):

DR. CAMILLO CARLSEN, Vice President and General Manager, Canada Pulp Products, Ltd., recently organized in Vancouver, B. C., to manufacture cellulose sponges from high grade white sulfite pulp. Until recently he lived in Denmark, where he was a director of Northern Diesel Auto, Ltd.

SPURGEON TILLMAN, whose appointment to the sales staff of St. Regis Paper Co. has been announced by Kenneth D. Lozier, vice president of the company. Mr. Tillman has been sales manager of Pasco Packing Co., Dade City, Fla., the world's largest citrus processor.

SIR HERBERT GEPP, Managing Director of Australian Paper Mfgr's, Ltd., Melbourne, has retired, according to word reaching PULP & PAPER. He recently made a tour around the world, visiting numerous mills and meeting many readers of this magazine.

HOBART C. McDANIEL recently appointed Manager, Technical Press Service in the Public Relations Dept. of Westinghouse Electric Corp., Pittsburgh. He succeeds Carl E. Nagel, and will be in charge of Company publicity in technical and trade magazines. He joined Westinghouse in 1939 as commercial engineer.

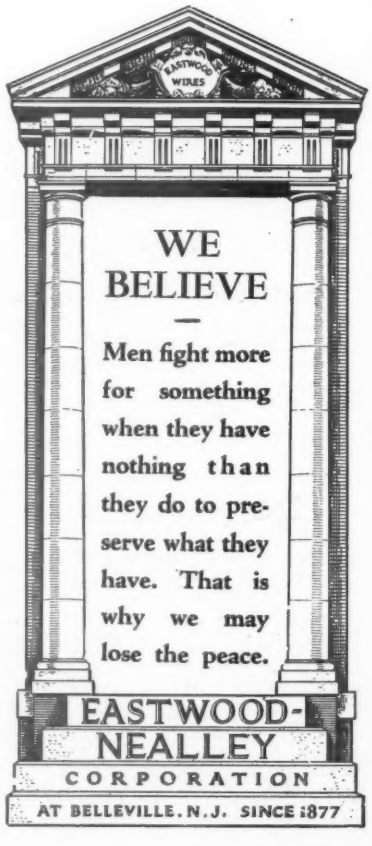
Provincial Paper Co. To Close Mill

Provincial Paper Co. has decided to progressively close down its 15-ton mill at Georgetown, Ont., this fall because realignment of manufacturing in Provincial's other plants more than offsets the loss of production in the company's oldest and smallest mill.

The Georgetown coating mill remains in full operation, but the management has considered that continued operation of the paper mill would be economically unsound. Now that Provincial's mills at Port Arthur, Thorold and Milles Roches have increased their production beyond that of Georgetown's the closing of the old mill can be effected without affecting overall production.

The older of the mill's two machines, with only a 50-inch deckle, was to be closed October 15, and the No. 2 machine, which produces a sheet only 10 inches wider, was to be closed down a month later.

Ultimate disposal of the property has not yet been considered.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WE BELIEVE
—
Men fight more for something when they have nothing than they do to preserve what they have. That is why we may lose the peace.
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TINKER DENIES INDUSTRY SLUMP

Articles in the New York *Times* and the Wall Street Journal predicting a marked slump in the paper industry, which was based on releases and reports of the Department of Commerce, were denied with facts by E. W. Tinker, executive secretary of APPA in an interview with **PULP & PAPER** in early October.

The statements were issued by the Forest Products Section of the Department of Commerce and had violent repercussions in the industry. Financial houses also leaped on the news stories which were picked up by wire service and carried throughout the U. S. and Canada.

"The statement in the news stories that sales by paper mills reached $3,000,000,000 is at least $500,000,000 too high," Mr. Tinker said. "In the second place, the APPA production ratio report has indicated higher production for each week this year with a comparable week in 1947." Mr. Tinker referred to figures carrying up to August 21st. "Therefore," he said, "the statement that 'most papermaking mills have reduced production' is patently in error."

The Department of Commerce was under severe criticism some time ago for issuing alarming and erroneous or incomplete statements. There followed a period when no such statements were made to the general press. In recent weeks **PULP & PAPER** has received telephone calls from several investment firms asking for fuller explanation of a report in the Department's "Report" which appeared to indicate a very serious recession in the Midwest board industry and implied that two or three minor shutdowns was a definite trend.

The New York *Times* article quoted the Department as saying: "Most papermaking mills have reduced production rather than attempt to cut prices in order to obtain a larger volume of business."

Not many months ago the U. S. Forest Service was under fire for similar misleading news releases on the subject of "waste" in U. S. forests.

Tinker Defends Industry

E. W. Tinker, executive secretary, American Paper and Pulp Association, speaking recently before the N. Y. Metropolitan group of TAPPI, took issue with a statement on industry policy issued by the Department of Commerce.

"A recent unfortunate episode indicates the degree of sensitivity of this industry to loose and unjustified statements," he said. "The August report of the Department of Commerce, covering the pulp and paper industry, contained a statement to the effect that this industry was curtailing production in order to maintain prices. This statement commanded almost national attention and was accepted as factual when the truth was that week for week the production in 1948 had exceeded that of 1947.

"I mention the above incident because of the impact it had upon an industry that employs about a half a million people in its operations and indirectly provides employment for 624,000 people in dependent industries;

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•

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an industry whose freight bill alone amounts to half a billion dollars, or some 7% of the total for the nation; an industry that pays 300 million dollars a year in taxes and yet its welfare can be materially affected by unfavorable publicity based upon carelessly drawn conclusions.

"The fact of the matter is that the fundamental economic position of the industry is such," said Mr. Tinker, "that based upon almost inevitable trends over the next ten or 20 years, the industry should be in a relatively favorable position. Looking upon the domestic market alone, it is quite obvious that the increase in population, which has been very large, will to all intent and purposes absorb the output of new capacity, particularly if the increased per capita consumption of paper, which is now approaching 350 pounds per individual, is taken into consideration."

"The demand for paper in the United States, unless we are to go into a social and economic tailspin, will inevitably increase," he said.

He also commented on paper tariffs in Mexico, which are aimed at protecting new expansion of the industry on that country.

"At the moment, in spite of all the talk about the reciprocal trade program," he said, "Mexico maintains a protective tariff that is prohibitive and at the same time only the rich can afford the most basic necessities of life from the standpoint of paper usage. If all of our gyrations in the international trade field mean anything, such situations as this cannot long exist and the 20 million people in the Republic of Mexico will have available to them paper supplies at prices they can afford to pay."

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, MARCH 3, 1933 AND JULY 2, 1946

Of Pulp & Paper, published monthly, semi-monthly in April, at Seattle Washington, for October 1, 1947.

State of Washington, County of King,—ss.

Before me, a Notary Public in and for this State and county aforesaid, personally appeared Miller Freeman, Jr., who, having been duly sworn according to law, deposes and says that he is the business manager of the Pulp & Paper, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the acts of March 3, 1933 and July 2, 1946, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Miller Freeman, 71 Columbia St., Seattle 4, Wash.
Editor, Albert Wilson, 71 Columbia St., Seattle 4, Wash.
Business manager, Miller Freeman, Jr., 71 Columbia St., Seattle 4, Wash.

2. That the owner is:

Miller Freeman Publications, Inc., 71 Columbia St., Seattle 4, Wash.

(Stockholders) Miller Freeman, Kemper Freeman, Wm. B. Freeman, Miller Freeman, Jr., L. K. Smith, W. E. Crosby, Harry P. Cain, all of 71 Columbia St., Seattle 4, Wash.

3. None.

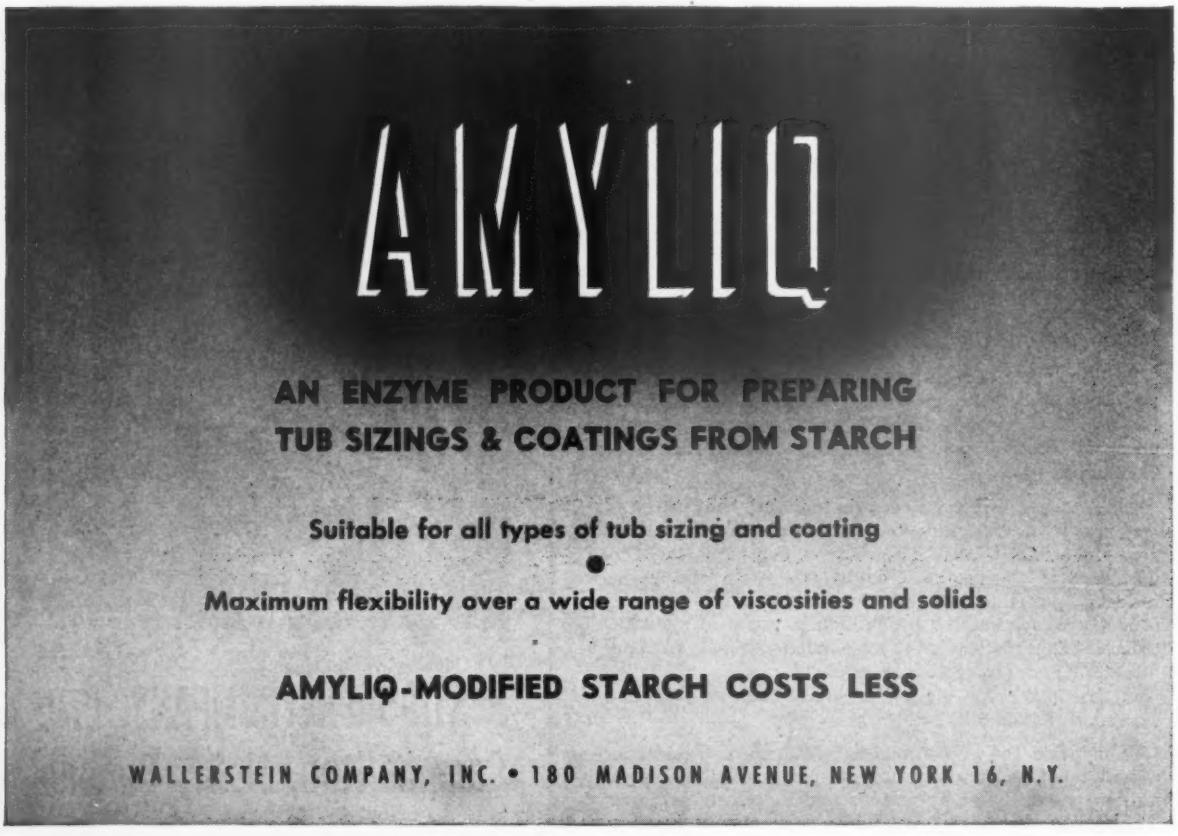
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear on the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; als that the said two paragraphs contain statements embracing affiants full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

MILLER FREEMAN, Jr., Business Manager.

Sworn to and subscribed before me this 21st day of September, 1948.

G. B. DELAWARE.

(My commission expires May 20, 1949).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Bagley & Sewall Ships Two Machines Abroad

Bagley & Sewall Co., Watertown, N. Y., has manufactured two 126-inch seven-cylinder board machines for operations in Finland and these machines were recently started from the plant on their long journey.

The order for the machines was closed by Abe Cooper, president, and the late Maynard E. Wright, the former sales engineer of Bagley & Sewall, when they were in Helsinki, Finland, last year. Contract was with Soteva, which is the representative for the Delegation of the War Repair Industry at Helsinki.

The machines have capacity of 100 metric tons per hour and speed of 450 ft. per minute. Total weight is 2,530 tons and they were shipped from the plant in a record ten days. It required 64 freight cars and 78 truck loads to get the machines to docks in Albany, N. Y., for overseas shipment.

Clark Adds Stations for Fork Trucks and Tractors

To provide faster, more competent service to users of Clark Fork lift trucks, tructractors and towing tractors, several new Clark truck parts and service stations have been opened. Stations are in Baltimore, Brooklyn, Malden (Boston), Chicago, Detroit, Indianapolis, Los Angeles, Memphis, Minneapolis, New York, Norfolk, Oakland, Philadelphia, St. Louis, Seattle and West Allis (Milwaukee) with additional units in the process of being established.

Jones Issues Jordan Data

A new, comprehensive 12-page bulletin: "Jones Jordans—Maintenance Data and Parts List" (No. EDJ-1022) has just been issued by E. D. Jones & Sons Co., Pittsfield, Mass.

It permits attachment of customer's Jones jordan assembly drawing, and allows for noting of the respective jordan's individual components such as plug and shell filling, etc. It is replete with instructions, pertinent drawings and illustrations.

China Paper Imports

Paper and pulp have varied recently from third to fifth most important import (according to dollar value) in China.

Pulp and paper imports have been climbing steadily from a value of U. S. $1,922,000 in March to U. S $2,752,00 in May.

Shartle Bros. Pump Described in New Booklet

By writing to Shartle Bros., Middleton, O., readers can obtain a fully illustrated 8-page folder, in colors, describing in detail the Miami HMS high-density centrifugal pump manufactured by Shartle Bros., builders of a complete line of stock, white water, and water pumps. This high-density pump is widely used for pumping of stock up to and above 10 per cent.

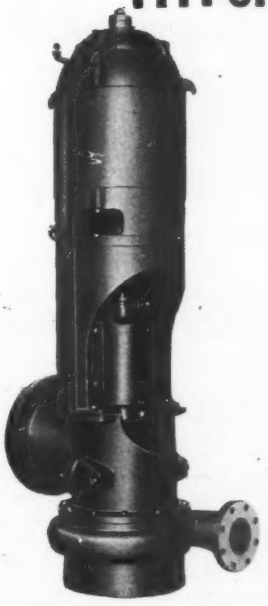
Calco Issues Bulletin

"Solubility of Dyes for the Paper Trade" by C. L. Zimmerman and H. R. McCleary, has been reprinted by American Cyanamid Co., Calco Chemical Div., Bound Brook, N. J., as a technical bulletin.

A copy of Calco Technical Bulletin No. 805 may be obtained by mailing your request to Advertising Manager, American Cyanamid Co., Calco Chemical Div.

Centrifugal Pumps—

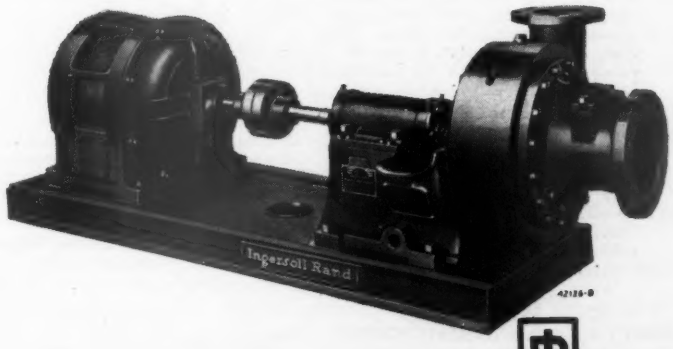
...For Pulp and Paper Mills



The many and diversified uses of pumps in pulp and paper mills are all completely covered by the long line of pumps that Ingersoll-Rand produces. From the comparatively simple task of pumping pure water to the pumping of rough stock and the strongest acids, there's an Ingersoll-Rand pump for the job.

A wealth of knowledge and years of invaluable experience stands behind each Ingersoll-Rand pump that is produced.

Write for bulletin No. 7022 or call an I-R pump engineer for more complete details.



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WANTED PLANT ENGINEER

With extensive experience in Dissolving or Bleached Sulphite Pulp Mill construction and operation. To work on design of new mill to be built in Alaska and operation after completion. Salary open. Submit complete experience record and references with application. Reply Box 23, PULP & PAPER, 71 Columbia St., Seattle 4, Wash.

NEW EQUIPMENT AVAILABLE FOR IMMEDIATE DELIVERY

1 Each General Electric (Engine Type) 250 HP, 360 RPM type TS Synchronous Motor, 440 volts, 3-phase, 60-cycle, 50 degree C Rise, .80 power factor. Stator arranged for forced air ventilation, less Shaft and Bearings.

1 Each General Electric No. CR7811, high interrupting capacity, non-reversing, dynamic breaking, dead front Controller, complete with air break type Contactor.

1 Each General Electric Excitor Motor Generator Set—7½ K.W., 125 volts, complete with Excitor and Motor on a common base.

Write, wire or phone:

SUMNER IRON WORKS
EVERETT WASHINGTON

WANTED: Engineer, preferably with pulp and paper mill experience, for cost analysis in maintenance department. Age about forty. Please give complete experience and salary expected. Address Box 20, Pulp & Paper, 71 Columbia St., Seattle 4, Wash.

WANTED: Mechanical Engineer with experience or interested in power plant operation. Give full details. Address Box 21, Pulp & Paper, 71 Columbia St., Seattle 4, Wash.

FOR SALE

McIntosh & Seymour Tandem Compound Engine No. 1540. 16" diameter high pressure — 33" diameter low pressure, 38" stroke, 130 R.P.M., rated 500 h.p. Has with it Twin Beam Vertical Marine Jet Condensor Pump 10x15x22.

Crane & Co., Dalton, Mass.

WANTED

Senior Chemist—Chemical Engineer or Graduate in Chemistry. 2 to 3 years experience in pulp and paper—preferably Kraft. Age up to 30. Job entails Development, Investigation and Control work under direction of Technical Supervisor. Mill conveniently located on Canadian Pacific Coast. Reply—Box 19.

Ohio Knife Marks 50th Year By Expansion

Founded in 1898, the Ohio Knife Co. of Cincinnati this year celebrates its 50th year of progress. Demand for Ohio Knife products necessitates its present construction work of plant and office expansion, according to officials. This organization, with its many years of experience, combined with complete and modern equipment, and guided by constant experiments and research, is providing fine precision products for many industries all over the world.

Bark Talks Held

The Massachusetts Institute of Technology, Cambridge, Mass., the Northeastern Wood Utilization Council held a conference Sept. 17 at New Haven, Conn., on "The Chemistry and Utilization of Bark."

Among the speakers were James C. Rettie, Northeastern Forest Experiment Station, "The Problem of Bark"; Erwin Kurth, Oregon State College, "The Chemistry of Bark"; Victor Harwood and Clifford D. Purves, McGill University, "Research on Bark at McGill University"; R. D. Pauley, Weyerhaeuser Timber Company, Development on Bark Problems by Weyerhaeuser"; L. P. Clermont and H. Schwartz, Forest Products Laboratories, Canada, "Structural Boards from Bark"; Fred O. Flaherty, Tanners Research Council, "The Tannin Shortage"; Jerome Rogers, Eastern Regional Research Laboratory, "Tannin from Northeastern Barks"; discussion led by Benjamin Wolf, Seabrook Farms, New Jersey, on "The Possible Use of Bark in Soils"; Robert S. Aries, Northeastern Wood Utilization Council, "A Program for Research on Bark Utilization."

The director of the Northeastern Wood Utilization Council is Dr. Robert S. Aries, 26 Court St., Brooklyn 2, N. Y.

Cochrane Bulletin

A new publication issued by Cochrane Corp., Philadelphia, describes the hydromatic single control valve, now standard equipment on Cochrane zeolite softeners and pressure filters with this valve, all normal functions of a valve nest are integrated and controlled by one valve.

Bulletin No. 4460 describes this valve and may be obtained by writing Cochrane Corp., 17th St. and Allegheny Ave., Philadelphia 32, Pa. In Canada, address Canadian General Electric Co., Ltd., 212 King Street West, Toronto 1, Ontario.

HARDBOARD

(Continued from page 84)

out in heat treating chambers at temperatures of 130 to 160° C., increases the stiffness and strength of the board.

If bakelite, tung oil, or linseed oil is added in a mulsified form to the fiber pulp, the finished hardboard will resemble the tempered hardboard which is produced by adding the tempering oils by impregnation of the finished board. The impregnated board is heat treated in hot air chambers. On account of the fire hazard, the oil tempering should be carried out in a separate building.

Boards heat treated or oil tempered after pressing must also be treated in a humidifier.

For the production of a variety of different articles as for instance perforated acoustical board, shaped and grooved board, roofing tile, lacquered board, etc., a special finishing department is a usual addition to a plant.

As mentioned earlier the wire mesh used in the hot press to assure rapid drying is not suitable where a product is desired to have smoothly finished surfaces on both its faces. When such a board is to be produced the wet sheet leaving the Fourdrinier end and press section has to be fully or nearly fully dried before entering the hot press. The pre-drying is performed in a so-called roller dryer well known in the plywood and insulating board industry.

The original cost of such an installation therefore becomes considerably higher than the usual type of hardboard mill.

Clad Steel Is Aid

"Users of pulp and paper and other chemical processing equipment built of steel, who have long sought a material that would offer strength, malleability, workability, and corrosion-resistance at a relatively low cost have found their answer in clad steels," Dr. W. G. Theisinger, manager, Sales Development, Lukens Steel Co., Coatesville, Pa., told members of the Puget Sound Section of the American Welding Society, at a recent Engineers' Club meeting in Seattle, Wash.

A clad steel is a combination of a corrosion-resistant metal, such as nickel, stainless steel, Inconel or Monel bonded permanently and uniformly to a backing plate of ordinary carbon or alloy steel.

"Since only a portion of the total thickness is made up of a special corrosion-resistant metal, the cost of the material itself, as well as its fabrication into a vessel, is reduced considerably over that of the solid corrosion-resisting metal," Dr. Theisinger said.

"The bonding of two metals together is not new; it was practiced in ancient times where some property was desired that was of such importance the cost of this composite plate was of minor consideration. The backing material may be of the carbon steel variety," Dr. Theisinger said, "to meet any specification, or it may be one of the low-type alloy steels where high strength or other special properties are desired.

NOW

3" thick Carbon Brick Linings

in place of 5" thick linings

This new lining is the result of fifteen years research by Stebbins to perfect a thin brick lining for sulphate digesters and auxiliary equipment, which would:

- minimize the loss of digester volume due to space occupied
- be readily installed in existing digester shells
- prove resistant to all types of corrosion encountered under varying cooking conditions
- place no limitation on operating procedure
- be resistant to thermal shock
- be resistant to abrasion

Write today for more complete information on this new 3" carbon brick lining.

Stebbins Engineering Corporation

TEXTILE TOWER SEATTLE 1, WASHINGTON

Fibreboard Report Out

In the first annual report ever issued by Fibreboard Products, Inc., net profit for the fiscal year ending April 30, 1948, was shown to be $4,261,449 as compared to $4,057,368 for the previous fiscal year. Sales were $54,507,912 for the 1948 fiscal year, as compared to $46,163,018 for the year previous.

The earnings represent a return of $3.60 per share on 834,612 shares of outstanding common stock, and 7.8% on consolidated net sales. Comparable earnings for the preceeding year are $3.36 per share of common stock, and 8.8% on net sales.

Additions to properties amounted to $7,918,307 during 1948, and $6,145,505 during 1947. Dividends on preferred stocks aggregated $1,254,537 both years. No dividends were paid on the common stock $3,006,912 being retained in the business in 1948; and $2,802,831 in 1947.

Stated D. H. Patterson, Jr., president of the company: "Substantially full operations continue in nearly all manufacturing divisions. A narrowing of the gap between supply and demand for the company's products has been clearly indicated, primarily as a result of an expansion in production facilities on the Pacific Coast."

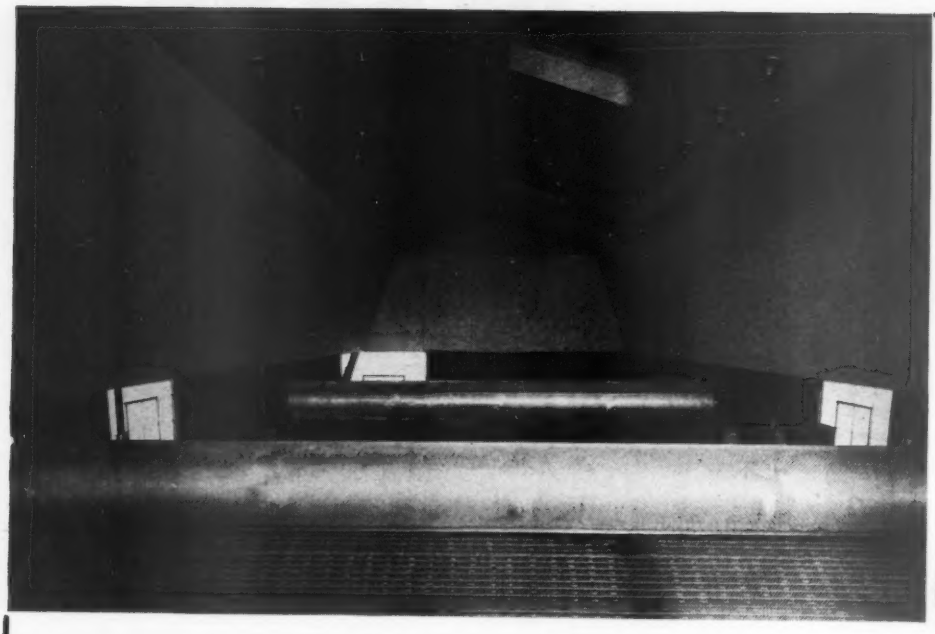
Company officials anticipate that the first machine in the new pulp and board mill at East Antioch, Calif., will be in operation by the end of 1948, and that the second machine will be in operation three months later.

A new carton plant has been completed at Portland, Ore., and went into action in July. "Plant facilities are being continuously improved" said Mr. Patterson. "A new turbine has recently been installed at the Stockton division, and work is progressing on a similar installation at the Antioch division. Buildings have been constructed for additional converting operations at both divisions. Additional equipment for the manufacture of shipping containers and folding cartons has been installed, and further equipment is on order and will be delivered in the near future.

"Over 80,000 acres of timberland have been purchased in California and Nevada to provide a perpetual supply of pulpwood under a 'sustained yield' reforestation program. All the pulpwood harvested from these lands will go to the new San Joaquin division at East Antioch. Additional pulpwood has been purchased under contract to supplement this supply."

Southland Paper Mills Estimate Fuel Savings

Southland Paper Mills, Herty, Texas, estimates fuel savings on one diesel-electric locomotive as $10,000 in its first year of operation. This estimate is based on operations to-date of the General Electric 45-ton industrial switcher that replaced a 40-year-old sawmill logging steamer in December, 1947. Officials of the company say at this rate the unit will pay for itself in about 2½ years.



• MGO washer hood with removable side panels at Weyerhaeuser Timber Co., Pulp Division, Longview, Washington, engineered and installed by DECO.

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